

# THE IRON AGE November 1, 1934

|                              |                                 |                                  |                             |                                  |
|------------------------------|---------------------------------|----------------------------------|-----------------------------|----------------------------------|
| J. H. VAN DEVENTER<br>Editor | G. L. LACHER<br>Managing Editor | W. W. MACON<br>Consulting Editor | T. H. GERKEN<br>News Editor | R. E. MILLER<br>Machinery Editor |
| F. J. WINTERS                | T. W. LIPPETT                   | G. EHRENSTROM, JR.<br>Pittsburgh | BURNHAM FINNEY<br>Detroit   | GERARD FRAZER<br>Boston          |
| F. L. PRENTISS<br>Cleveland  | R. A. FISK<br>Chicago           | A. I. FINDLEY<br>Editor Emeritus | L. W. MOFFETT<br>Washington | R. G. MCINTOSH<br>Cincinnati     |



## Contents

|                                    |     |
|------------------------------------|-----|
| Want More, Not Less                | 11  |
| Economic Dictatorship at Its Worst | 12  |
| New Methods in Making Airflow Cars | 16  |
| Specialty Selling                  | 21  |
| Gas Heating for Forging Furnaces   | 23  |
| Foundry Congress                   | 25  |
| Convention of Steel Fabricators    | 32  |
| A Rift in the Clouds               | 34  |
| Gear Makers Meet                   | 37  |
| New Equipment                      | 41  |
| News                               | 45  |
| Personals and Obituaries           | 49  |
| Washington News                    | 51  |
| Automotive Industry                | 56  |
| Markets                            | 59  |
| Construction and Equipment Buying  | 82  |
| Products Advertised                | 116 |
| Index to Advertisers               | 134 |

### THE IRON AGE PUBLISHING COMPANY

F. J. FRANK, President      G. H. GRIFFITHS, Secretary      C. S. BAUR, General Advertising Manager  
 PUBLICATION OFFICE: N. W. Corner Chestnut and 56th Sts., Philadelphia, Pa.  
 EXECUTIVE OFFICES: 239 West 39th St., New York, N. Y., U. S. A.

Member, Audit Bureau of Circulations  
 Member, Associated Business Papers

Published every Thursday. Subscription Price:  
 United States and Possessions, Mexico, Cuba,  
 \$6.00; Canada, \$8.50, including duty; Foreign  
 \$12.00 a year. Single Copy 25 Cents

Cable Address, "Ironage, N. Y."

#### ADVERTISING STAFF

Emerson Findley, 311 Union Bldg., Cleveland  
 B. L. Herman, 675 Delaware Ave., Buffalo, N. Y.  
 H. K. Hottenstein, 802 Otis Bldg., Chicago  
 Peirce Lewis, 7310 Woodward Ave, Detroit  
 Charles Lundberg, Chilton Bldg., Chestnut &  
 56th Sts., Philadelphia, Pa.  
 C. H. Ober, 239 W. 39th St., New York  
 W. B. Robinson, 428 Park Bldg, Pittsburgh  
 W. C. Sweetser, 239 West 39th St., New York  
 D. C. Warren, P. O. Box 81, Hartford, Conn.

EIGHTIETH YEAR OF SERVICE TO THE METAL WORKING INDUSTRY



*Stocks  
you can depend  
on to meet  
every Steel  
Requirement*

### FREE—STEEL GUIDE



Your most complete steel guide—more than 200 pages of information on steel and allied products on hand for immediate shipment. If you have not received a copy of the current Ryerson Stock List, we will be glad to send you one. Address our nearest plant.

**H**ERE is steel in every shape and size—standard and alloy grades—in stock for immediate shipment. Allied lines such as non-ferrous metals, welding rod, babbitt, boiler tubes and fittings, etc., are also included. Shears—saws—and special flame cutting equipment quickly cut to any length or special shape. Prompt shipment is assured.

For more than 90 years Ryerson Steel-Service has been meeting the steel requirements of industry. Ten strategically located plants make this service quickly available in your territory. Draw on the plant nearest you.

Joseph T. Ryerson & Son, Inc. Chicago Milwaukee St. Louis Cincinnati  
Detroit Cleveland Buffalo Boston Philadelphia Jersey City

# RYERSON

## S T E E L - S E R V I C E



# ▲▲▲ THE IRON AGE ▲▲▲

ESTABLISHED 1855

NOVEMBER 1, 1934

Vol. 134, No. 18

## Want More, Not Less

**W**HEN a life boat abandons a wreck far at sea, the survivors are put on rations of food and water. In such an emergency, the philosophy of scarcity is a proper one to follow; hence each one must receive an equal share of the available means of sustenance.

But no reasonable person would consider this practice as anything except an emergency measure. Certainly the shipwrecked unfortunates are kept alive, not so much by their meager rations as by the hope of augmenting them when land is made.

It is well for us to consider carefully the difference between emergency situations and the long term after the emergency. During the former we may reconcile men to receiving less; during the latter we cannot prevent them from wanting more. Nature whispers into the ear of every normal human being "want more, not less" and it has been the almost universal obedience to that command that has been responsible for all progress, and all hope.

Work spreading, which is another name for cutting down hours of work per week so that there may be enough to go around, has been a necessary expedient during a great emergency. It, too, follows the same philosophy of scarcity that puts shipwrecked mariners on short rations.

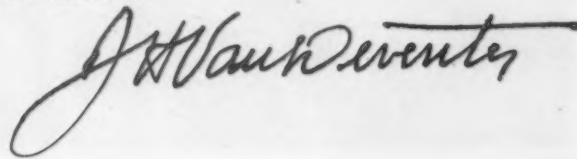
Defeatists who have lost hope and vision would have us nail a flag of surrender to the philosophy of scarcity at America's mast-head, in the form of a 30-hour work week

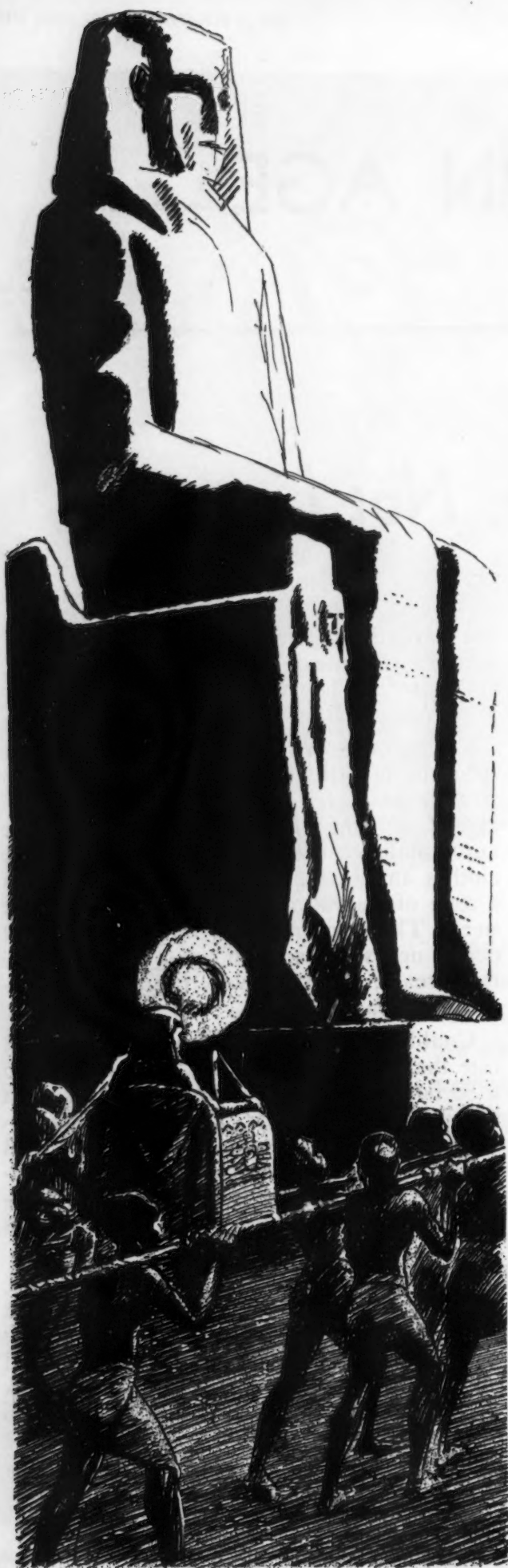
law for all industry. They would reverse nature's command and make it "want less, not more." They would commit Americans to permanent life boat rations.

During the many months that we have spent in the life boat on short rations, we Americans have accumulated an unprecedented amount of wants. We want more automobiles, more and better homes, more clothes and shoes. American industry is in a state of starvation for new machinery and steel. These accumulated wants form actual needs; needs that are sufficient, when the barrier breaks, to tax the very limit of our producing capacity.

Could American workmen, at the highest rate that industry could pay, earn enough in a 30-hour week to provide them with what they legitimately want? Could they look forward to buying automobiles and homes and other comforts and necessities if the defeatists freeze their future into the scope of a depression working week? Common sense says "no."

We must look forward to wanting more, not less. And since work is the only way in which we can satisfy these wants, we must not permit our future progress to be sabotaged by such disastrous legislation. It would break the oars of the life boat and keep us at sea on short rations.





## II—ECONOMIC AT ITS

**E**CONOMIC dictatorship and political democracy cannot live side by side. They are mutually exclusive; the conflict between them is mortal. One or the other must go down. If economic dictatorship wins, it will first destroy democracy, and then will itself be overwhelmed in the ruins of the megalomaniac structure it has attempted to rear.

In our own country a short year

By JOHN H.

**W**E have already glanced at the Egypt of the Pharaohs and the Jews. But that was Egypt before the rise of Rome. Now, jumping over a few centuries, we will look at Egypt under the Romans—the Egypt that had finally become a province of Rome, though the last important one to be subjugated.

The story of Egypt under the Romans is just one chapter in the history of a country that has been the victim of economic planning for a longer time than any other of which there is record. Certainly 4000 years ago the Pharaohs were the planners. Ultimately the Greeks got the upper hand, established themselves as favorites of the rulers as Joseph had done, and engineered the country's economic system in the interest of Greek commerce. All important political and administrative jobs went to them. They surrounded the king, composed his court, governed provinces, were chiefs of police, judges, managers of the state factories, engineers, inspectors of trade, industry, everything. They collected taxes and dominated the foreign trade.

Every field of economic activity in Egypt was centralized and nationalized; much of it was state monopoly. The king was still titular owner of the land, his title dating from the excellent trade that Joseph had made for his Pharaoh. The great public works, necessary to Egypt's

## CS

po-  
live  
ex-  
nem  
must  
ship  
noc-  
ver-  
ega-  
at-  
year

N H.

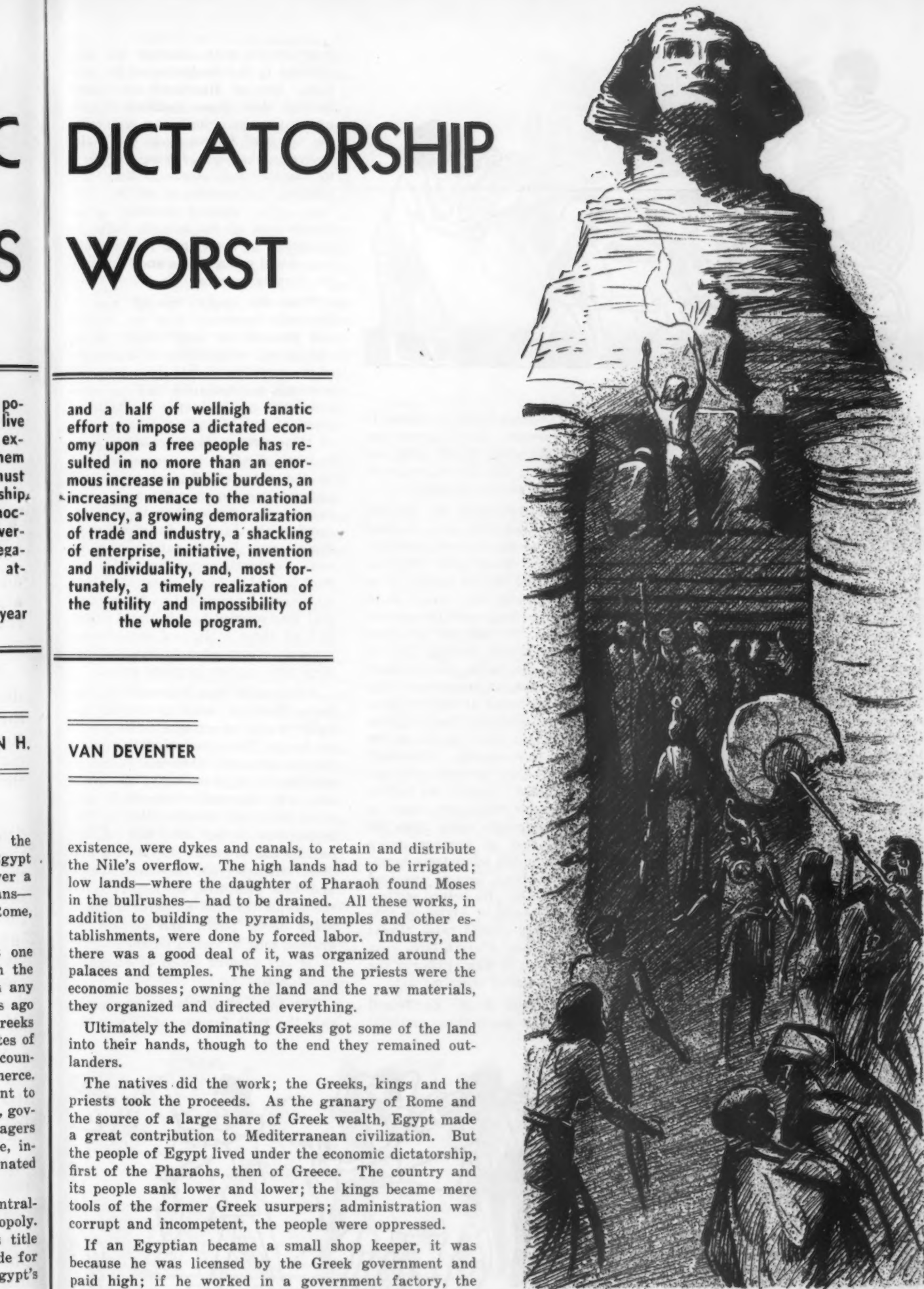
the  
gypt  
er a  
ns—  
come,  
  
one  
the  
any  
ago

weeks  
tes of  
coun-

merce  
nt to  
, gov-  
agers  
e, in-  
nated

entral  
opoly

title  
de fo  
gypt'







goods he made belonged to the government, precisely as they would today under Russian communism.

The wise administration of Augustus helped conditions somewhat, but under later rulers they became desperate once more. The people of Egypt, who had for ages provided sustenance for the body of Mediterranean civilization, remained the most oppressed peasantry of the Mediterranean world. They had been for thousands of years the victims of economic dictatorship; they were such under Greece and Rome, and when Napoleon went to Egypt; they were such when Britain practically annexed and became the overlord of Egypt; they have remained such, despite the construction of the Suez Canal, the Assouan Dam and the improved irrigation works. All these are fruits of economic planning; useful and desirable, they have been given to the people of Egypt at the price of their political independence and economic liberty. So Egypt continues the principality of its British overlords, as in other times it was of the Pharaohs, the Greeks and the Romans. Economic planning can be imposed only where political liberty is sacrificed, and Egypt has longest had this sacrifice exacted from it.

### Back Again to Rome

We can now dismiss Egypt and resume our study of doings at Rome, the world's headquarters. One of the most ardent economic dictators was the Emperor Nerva. Although he occupied the throne only about two years at the end of the first century, he tried hard and sincerely to steer Italy back from its alarming depression to restored prosperity. Italy was fast losing population, and Nerva sought to stop this by granting the farmers cheap credit—earliest example of a Federal Farm Loan system. Gather-

ing money through taxes, he loaned it out to the farmers. But it proved too expensive; the public credit could not carry the load; and Nerva resigned the sceptre in general disgust.

Nerva was succeeded by Trajan, whose reign, filled with wars, further reduced the economic level, particularly of Italy. Then came Hadrian, who thought the empire needed to be further urbanized—to have more cities, both in Italy and throughout the provinces. He had the idea that if there were enough markets for the products of the farm, the farmers would again become prosperous. His theory was the same as that of some of our present economic theorists, who tell us there are more people on the farms than are needed. Hadrian's difficulty was that he frequently got his wires crossed. Just as one faction of our economic managers want to move a lot of people away from the farms; and just as another group want us to establish subsistence homesteads—so Hadrian became involved in cross-purposes. He helped settlers get land and credit in Africa on condition that they should raise olives; and presently the African olive crop was so big that it was crowding the Italian olives out of their market.

Whoever reads Prof. Rostovtzeff will realize how much these artificial

interferences with economic law contributed to the weakening of the empire. One of Hadrian's successors, finding that these conflicting programs were bringing many regions to the verge of famine, built grain elevators in the corn-growing provinces to accumulate stores. But this aroused the resentment of the corn belt, which started building grain warehouses of its own to keep its foodstuffs at home; and the competition raised grain prices and increased the famine menace.

What the empire needed was to unshackle economic law, let supply and demand do their proper work, and permit competition to determine where supplies should go. But the economic manipulators had no more conception of the proper operation of demand, supply and price than some of their present-day successors seem to have. So the plans succeeded just to the extent that they permitted natural laws to operate, and failed just to the extent that they interfered with the free functioning of those laws. Hadrian and his agents were constantly requiring that foodstuff be sold at fixed prices; also, that middlemen be excluded on the ground that they exacted an additional profit. But all these attempted controls encouraged speculators to buy up supplies and further increase prices.

Along with these economic regulations, Hadrian went in strong for public works as a means to keep people busy. These increased the public burden so much that his successor went in for rigid economy; the treasury was presently exhausted, and when the great Emperor Marcus Aurelius was forced into war in the east he had to extort ship money and other tributes from the cities. These and like measures so impoverished the people that the Emperor nullified many debts, public and private, or granted long extension on them—just as in our present epoch of economic dictatorship.

The Edict of Diocletian was probably the most famous, as it was the



most comprehensive and ambitious, of all the Roman economic dictatorships. He came to the throne at the beginning of the fourth century, when it was tragically apparent that only drastic measures could save the empire from the final disaster which came two generations later. His scheme was so sweeping that once in effect it could not easily be undone. His successors were compelled to travel along the same road, notwithstanding that all its signboards pointed toward disaster, and after the empire's collapse in 476 A. D. and the sloughing off of the provinces which gradually shaped themselves into independent nations, the hang-over from Diocletian continued to curse them. Some writers, indeed, have argued that much of the responsibility for the degradation of European society during the Dark Ages must be laid at his door.

At any rate, Diocletian's motto was "thorough." When he went in for price-fixing, he went all the way. He ordained price schedules covering hundreds of articles, and penalties, even including death, that have hardly been matched since.

There seems to be justification for the belief that Diocletian's measures strongly influenced the economic processes of the centuries following him. He based his whole scheme of dictated prices and controlled supplies on the broad theory that there must be a proper, normal, reasonable price for everything; and that if everything could be brought to this general and ideal level, then a sufficiently vigorous administration could hold them there. His notion was that if he could once herd his people into Utopia, they would like it so well that they would never try to escape, and his idealistic controls would thereafter work automatically. Now, this was exactly the idea which dominated the economic thinking of the Middle-Age canonists; it seems as if they must have inherited it from him.

Summarizing the forces that in this period were urging toward the em-



pire's collapse, Prof. Rostovtzeff reaches this conclusion:

I think that the gradual decay of the vital forces of the Empire may be explained by two sets of phenomena, both of them connected with one common feature in the life of the ancient state in general—the supremacy of the interests of the state over those of the population, an age-old idea and practice, which had to a large extent undermined the prosperity of the oriental monarchies and of the Greek City States. As soon as this supremacy became decided it was bound to act as a depressing influence on the masses and to cause them to lose all interest in their work. The pressure of the state on the people was never so heavily felt as under the Roman Empire. . . . The administration of the vast Empire required more and more attention, and the only method of countering the selfish policy of the ruling classes was by the constant development of imperial bureaucracy which swallowed up a large part of the state's resources.

The foregoing is so applicable to the economic dictatorships now operating in Italy, Russia, Germany, and the United States, that it might well be suspected of being a subtle polemic against them. But that accusation will not lie, for Dr. Rostovtzeff's book was published in 1926, before the economic management programs of today had got going.

One of the most vicious phases of

economic dictatorship was tax farming. On the theory that the state was supremely important and its people supremely unimportant, persons of wealth and prominence were required to assume the responsibility of tax gatherers, without remuneration. The tax farmer was held to strict accountability; if he failed to collect his allotment he was responsible for the deficit. The similarity of this to the processing taxes of AAA is obvious; the processors are required to collect the tax and turn it over to the government, without compensation. Thus the meat packers, the millers, textile manufacturers and the oil industry are converted into tax farmers.

The Roman tax farmers protected themselves by corruption and oppression so that ultimately they enriched themselves at the expense of both government and people. In like fashion, it is rumored that some of our modern processors are fixing their prices high enough to cover the tax, plus a profit in addition.

#### "Emergency" Measures Became Permanent

It is impossible to attempt here more than a sketch of Roman dictated economy. The various measures which made up the system were generally adopted in the beginning as emergency policies, just as the NRA program has been. But the tendency is always for such emergency measures ultimately to become regularized and permanent. It was so in Rome. The emperors got thoroughly involved with their emergency measures and then they found themselves unable to back out. It was as impossible to unscramble the omelet as, we now begin to realize, it will be ultimately to put our Humpty Dumpty of NRA together again. A para-

(Continued on Page 88)





# Chrysler Employs New Methods

**W**HEN the Chrysler Corp. decided to pioneer this year in volume production of a streamlined car with its Airflow Chryslers and De Sotos, it was faced with the necessity of changing its manufacturing processes so that the new models could be built economically.

The Airflow design specified that the body and frame be a single unit, the all-steel body being trussed with steel girders like a bridge, as sturdy at the front as at the rear. Passengers ride inside the frame instead of over it, with the body forming a protective wall of steel. This type of frame construction, an innovation in the automobile industry, is claimed to be 40 times more rigid than the conventional type.

Airflow Chryslers and De Sotos are large cars which occupy more manufacturing floor space than cars of standard design. The problem that presented itself was to rearrange plant facilities and install new equipment which would make possible the production of just as many cars in the same length of time as formerly, despite the fact that each Airflow in process of production took up more floor space than previous models. In

solving this problem the management introduced departures from conventional shop practice which broke as sharply with tradition as does the Airflow design compared with cars preceding it.

Outstanding are the processes involved in the fabrication of tubular steel seats, the use of so-called "air curtains" as protection against fumes and dirt around spray booths in the body plant, an air conditioning plant employing butane gas as fuel to supply tempered air to spray booths and drying ovens, welding of body parts on "hydromatic" welding machines, drying of moisture on bodies "in the white" in induction-type electric ovens, and prevention of rust on all-steel bodies by means of the Parcolite process.

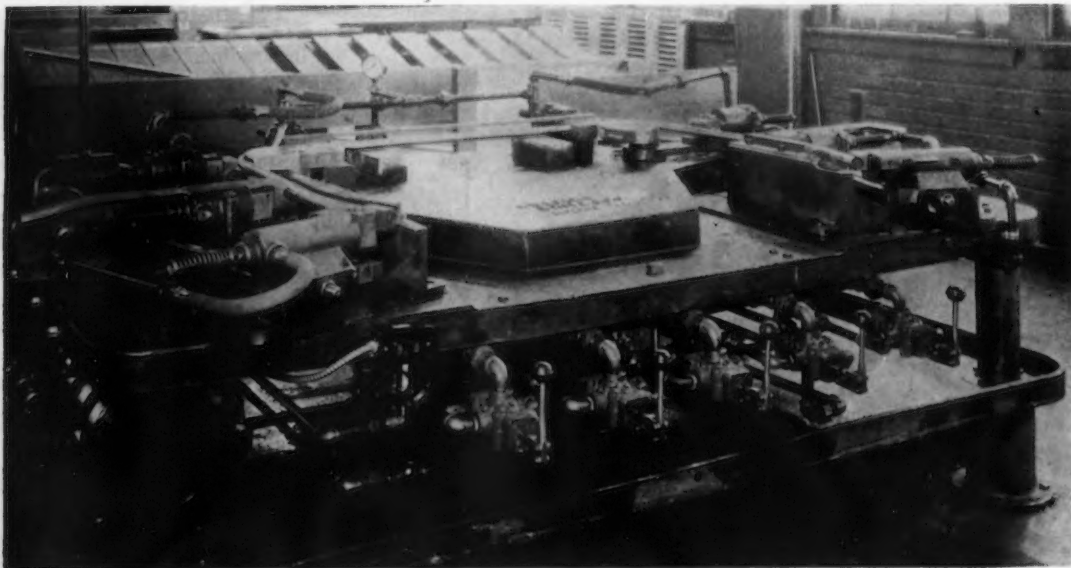
## Crew Trained to Manufacture Seat Units

The complete break with tradition in the design and construction of the new Airflow Chryslers and De Sotos is illustrated in the manufacture of seat units. In effect, Chrysler has gone into the metal furniture business on a large scale, with new machinery designed especially for the purpose

IN the manufacture of its Airflow cars, the Chrysler Corp. has broken sharply away from conventional practices. Innovations described in this article include a group of special tube bending machines to form tubular steel seats; "fresh air curtains" around paint spray booths to protect workers

and a new crew of mechanics trained in its own factory.

Seats in the Airflow cars are cradled in chromium-plated seamless steel tubing, the completed unit resembling modernistic chairs or davenport. The tubing is of S.A.E. No. 1015 steel, 16 gage in thickness and 1 in. in diameter, and has a Brinell hardness of 62. After being cut to length, it is polished on three centerless-feed polishing machines set up in tandem. These machines, placed about 3-ft. apart, are attached to a common structural steel base and are driven by a 20-hp. motor at the left or feeding-out end. They polish and finish for chromium plating 20 ft. of



▲ ▲ ▲  
The front seat back frame and robe rail are formed on a special high-speed tube bending machine, which turns out 75 to 90 parts an hour.  
▼ ▼ ▼



# In Making Airflow Cars

By BURNHAM FINNEY  
Detroit Editor, THE IRON AGE

against fumes and dirt; a large air conditioning plant employing butane gas as fuel to supply tempered air to spray booths and drying ovens; arc welding of tubular seat parts after they are chromium plated; and drying of moisture on bodies "in the white" in induction-type electric ovens.

tubing per min. The machines and the work are handled by one operator and a helper.

Three different grades of wheels are used to polish the tubing. The wheel mounting is unusually heavy, and the large shaft runs in self-aligning ball bearings and is driven by a triple Vee-belt drive. A swinging frame provides quick adjustment for wheels. A suitable truing device trues the wheels while in motion. The centerless feed is mounted in a tilting housing; speed and feeds may be varied as desired.

Following the polishing, the tubing is bent into the various desired shapes by means of hydraulic ma-

chines. The front seat back frame and the robe rail are formed on a high-speed tube bending machine. Stock is inserted at the rear as shown in the illustration. The first valve clamps the stock and back wiper dies, and the second valve operates both rear swinging arms, bringing the back wiper dies around to form a U shape. Then the front end of the stock is pushed down into the front dies, where the third valve clamps the stock while the fourth valve is operated to carry the two front cylinders toward the operator, forming the curve on each side. The fifth valve swings the back bending die for unloading. This machine forms 75 to 90 parts an hour.

The coach seat back-rest is formed on a special machine. The tubing is bent to a horseshoe shape on the right-hand section and then moved over to the left section to be finished. A straight tube is inserted in the right-hand section, and in succeeding operations a complete piece is formed at each cycle of the machine. Production ranges from 60 to 70 pieces an hour.

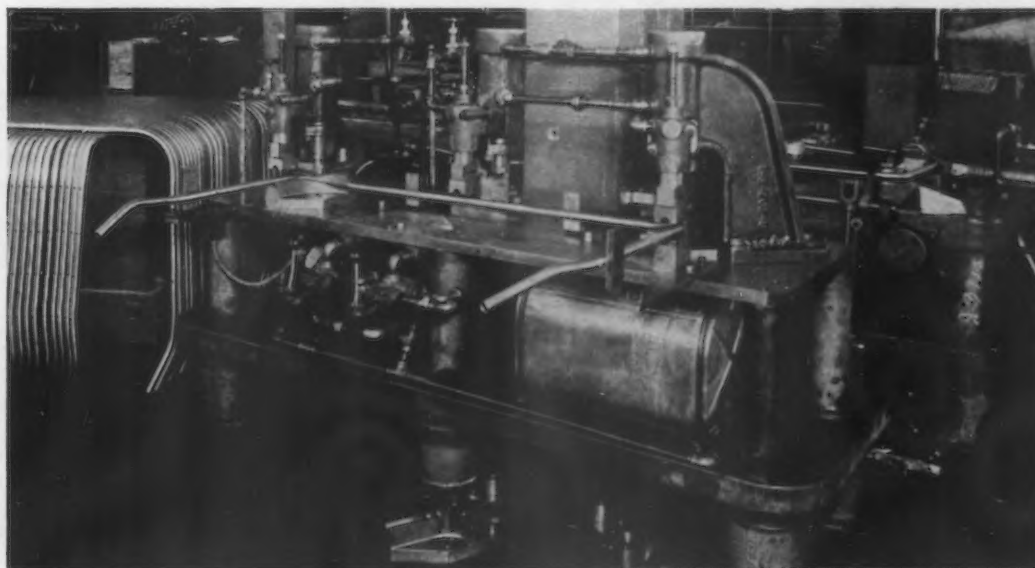
A special high-speed tube bender has been installed for kinking the top of both the coach and sedan backs.

This kink in the tube forms the robe rail. The machine is equipped with several cylinders, the two outer cylinders being used for the sedan robe rails and the center and right-hand cylinders for coach seat robe rails. Output is 120 to 150 pairs an hour.

## Arm Rests Formed on Special Machine

Front seat arm rests are formed on a special machine, as shown in the accompanying illustration, both the right and the left-hand rests being fabricated in one cycle. The first valve at the left clamps two pieces of tubing, and the second valve operates the swinging arm, carrying the first bending die cylinder and forming about half the bend. An air valve controls a cylinder which holds the second swinging arm raised out of the way to carry the above movement under it. The first bending cylinder is then backed away and the dies clamped on the work, whereupon the third valve lowers the second wiping die cylinder to the position shown in the illustration. The fourth valve clamps the work between the wiping dies on the second cylinder and the stationary die (which is collapsible), and the fifth valve swings this cyl-

▲ ▲ ▲  
Tops of coach and sedan backs are kinked at rate of 120 to 150 an hour on this tube bending machine.  
▼ ▼ ▼



inder about the stationary die to complete the bend. The stationary die collapses so that the finished piece can be removed from it. Grooves in the dies are not straight, forming the tubes in such manner as to allow extra leg room in the body.

Each bending machine is fitted with two motor driven hydraulic pumps. Each pump line has an adjustable pressure relief valve, one to set for the pressure required to clamp the tubing and the other to swing the wiping die cylinders. The oil tank, pumps, motor, piping and valves are located in an oil pan, which is mounted high enough to provide foot room beneath it for the operator and to permit sweeping under the machine.

After the tubing is bent into the proper shapes, punch press operations are performed. The tubular sections of the seats then go through a cleaning process, followed by copper plating, nickel plating, nickel buffing and chromium plating.

#### Parts Welded After Chromium Plating

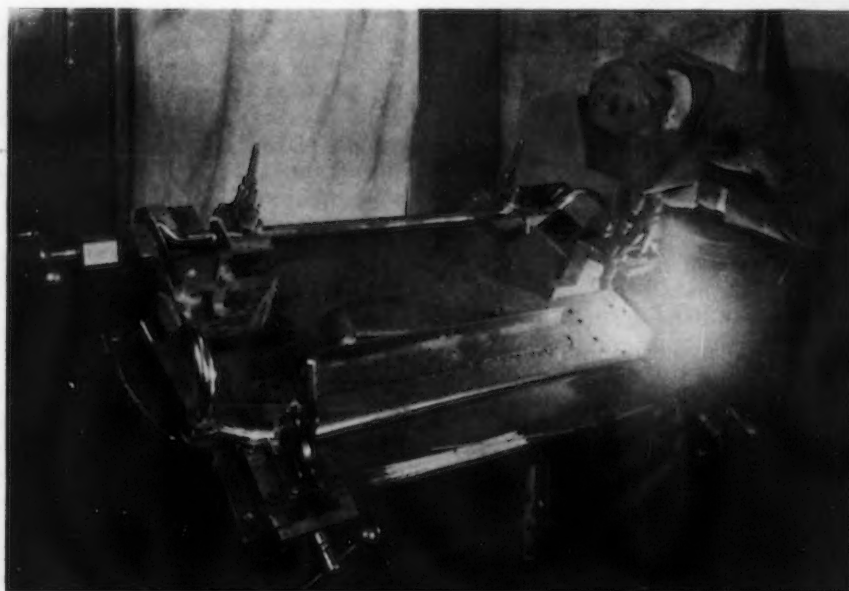
Heretofore in production work, chromium plating has been done after parts are welded together, but in the case of tubular seats for Airflow cars the individual parts of the seats are chromium plated and then arc welded. In the welding of seats for the coach model, two pieces of tubing are used and 24 individual welds are made. Three welding operations are performed in special jigs. A  $\frac{1}{8}$ -in. lightly fluxed welding rod is used, with

approximately 85 amp. of welding current and 20 volts at the arc. Standard 100-amp. welding sets are employed.

Before tubes are put into the assembly jig preparatory to welding they are cut away at either end on one side so as to resemble straps 1 in. wide and  $\frac{1}{8}$  in. shorter than the circumference of the tube. The straps are wrapped tightly around the tube. The end of the strap is arc welded, homogeneously fastening the tubes together and forming a secure joint. Since the heat of the electric arc is highly concentrated, it does not discolor the chrome plating. The oxides deposited on the tubing from the arc

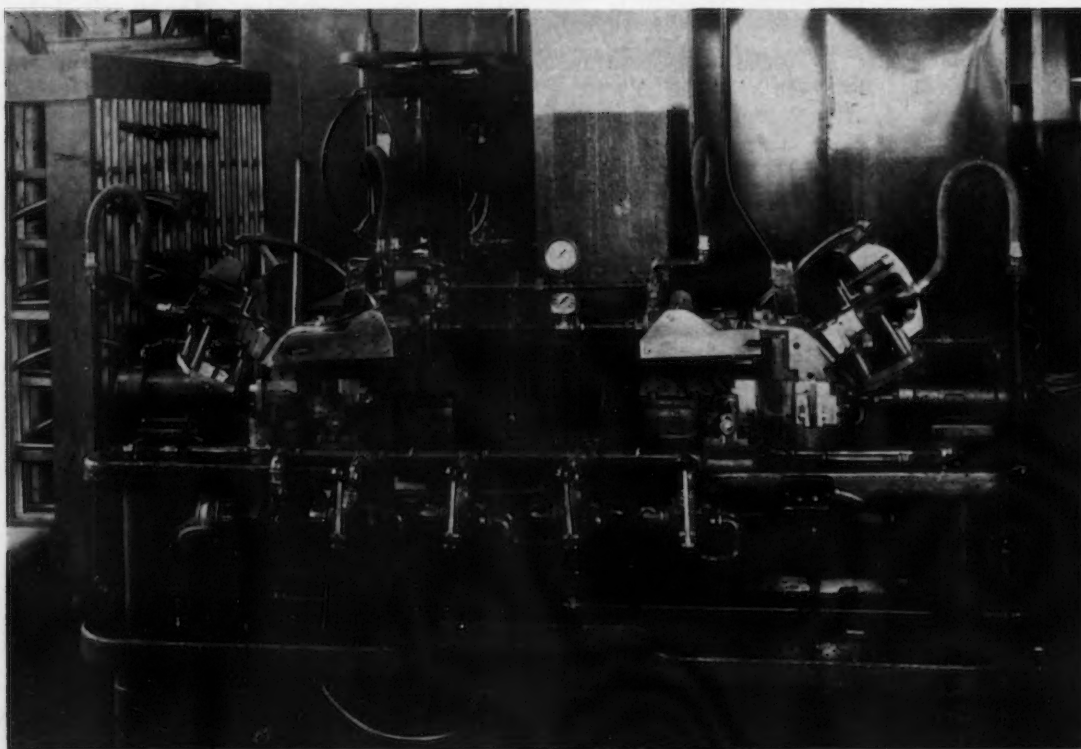
are removed readily with a soft brush, leaving the tube bright and clean. One operator is able to weld 15 complete seat units an hour by the new method.

Seat and back cushions are made in a department on the second floor of the factory and sent in a chute conveyor to the end of the frame assembly line, where they are installed. Another conveyor takes the finished seat to the general assembly line to be installed in the car. A teletype from the planning department to the seat assembly line keeps the superintendent of the latter constantly advised of what body styles are coming through in order that the proper types



ABOVE

Individual parts of tubular seats are arc welded together after they are chromium plated, thus reversing the usual procedure. Three welding operations are performed in special jigs. A  $\frac{1}{8}$ -in. lightly fluxed welding rod is used, with about 85 amp. of welding current and 20 volts at the arc.



AT LEFT

Lower ends of front seat arm rests are kinked on this machine.

of seats and upholstery may be selected.

Among the advantages of the tubular seat construction is a marked saving in weight, the completed unit weighing only 22 lb. The hand-rail, foot-rest and robe-rail are integral with the seat frames, resulting in economies in weight and labor.

#### Air Curtains Provided at Spray Booths and Drying Ovens

To protect workers from irritating fumes so that they no longer have to use masks, so-called "fresh air curtains" have been draped around the 36 spraying booths in the body plant where Airflow bodies are painted.

These curtains, consisting of controlled currents of cleaned, filtered and tempered air, vary in thickness from 3 to 6 in. They are forced by fans through rows of vents around the domed ceilings of the booths and flow downward to within a few inches of the floor, where they disintegrate into small currents. These small currents are pulled into the booths and up through openings in the center of the ceilings by additional fans, picking up paint fumes and dust on the way.

This process has made it possible to open up spray booths instead of having them closed off, the air curtains forming the partitions between them. Production of these air cur-

tains requires 20,000 cu. ft. of filtered air per min. per booth at a temperature of 80 deg. Air travels from suction fans to the point of use through large metal conduits.

Air curtains are employed not only to ventilate spray booths, but also at the ends of drying ovens to seal in the heat. They are so effective that the temperature within 2 ft. of the oven is 70 deg., whereas just inside the oven it is 300 deg. This method of temperature regulation eliminates canvas curtains, sliding doors and other apparatus which might injure bodies during the finishing process. It also provides ideal working conditions for employees.

#### Two Types of Air Conditioning

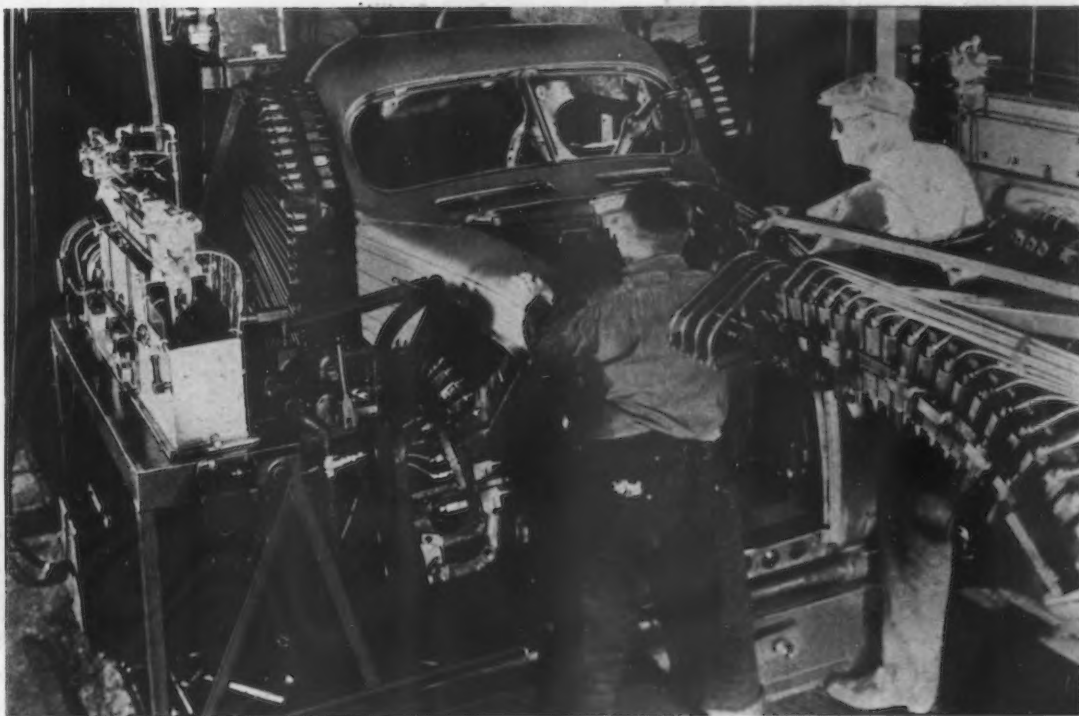
Air conditioning in the body plant is of two types. The first is for low-pressure air, which is heated to 80 deg. and used for air curtains and ventilation. The second is the air used for making or drying various primer, surfacer or lacquer coats, requiring temperatures up to 250 deg., and for enamel work up to 400 deg. The high-temperature air for these operations is so accurately controlled that the temperature in ovens 500 ft. long does not vary more than 2 deg. from front to back, or top to bottom. This accuracy in heat control produces the finest undercoat conditions and painted surfaces.

The air-conditioning plant supplying the tempered air is located on the roof of the eight-story body building. It is housed in a structure 300 ft. long and 75 ft. wide. Equipment consists



#### ABOVE

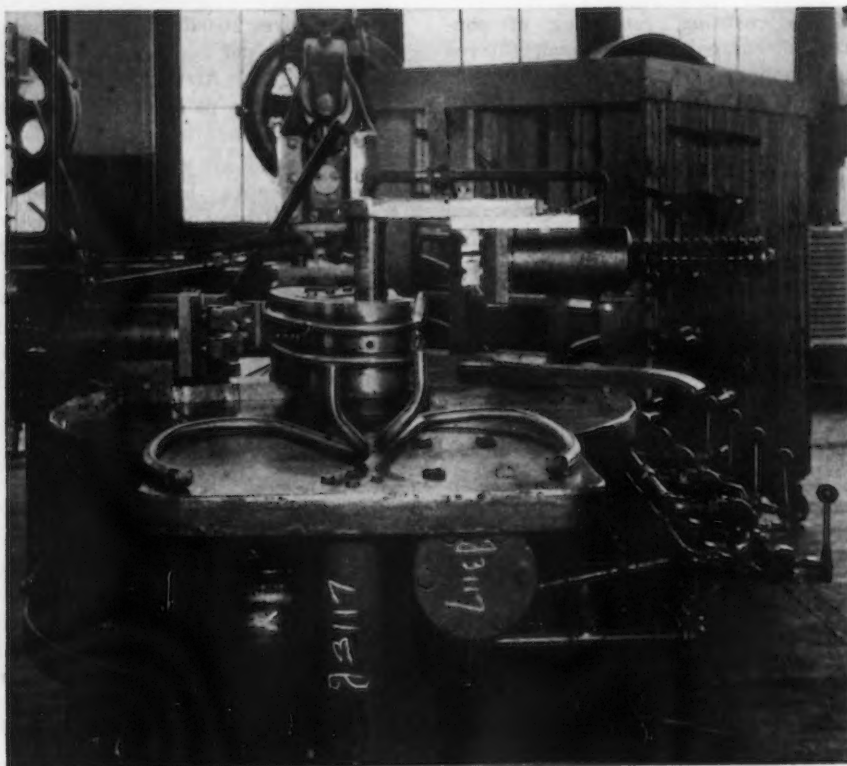
To protect workers from irritating fumes without the use of masks, "fresh air curtains" have been draped around 36 spraying booths in the plant where Airflow bodies are painted. Curtains consist of controlled currents of cleaned, filtered and tempered air, varying in thickness from 3 to 6 in.



#### AT RIGHT

The front end shell and front end frame assembly are spot welded together on "hydromatic" welding machines.





A high-speed tube bending machine designed especially for bending front seat arm rests. Grooves in the dies are not straight, forming the tubes in such manner as to allow extra leg room in the body.

of 196 butane gas burners, 10 intake fans having a total capacity of 1,200,000 cu. ft. per min., and 114 discharge fans of 10,000 cu. ft. per min. capacity each. The amount of butane gas burned by this plant every 24 hr. is equivalent to 2,000,000 cu. ft. of city gas, or enough to supply a city of 216,000 population. All air delivered passes through oil filters.

In the construction of Airflow bodies the front-end assembly and the

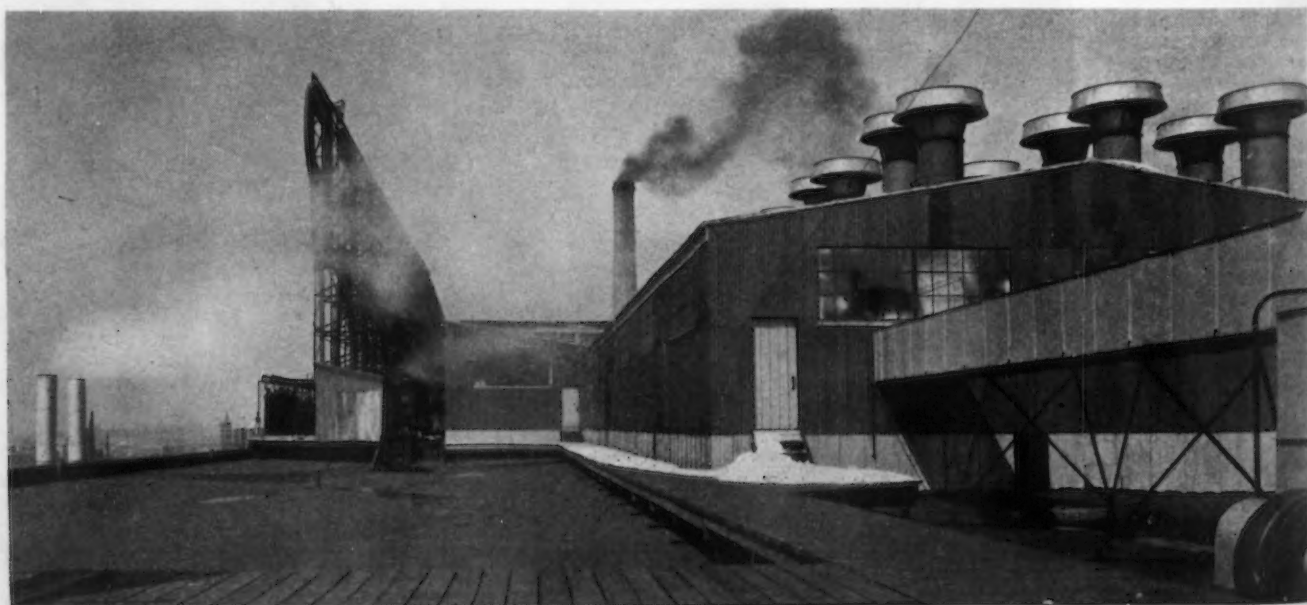
rear-end assembly are made in different plants, one in the Chrysler Algonquin plant and the other in the Kercheval plant. The rear-end assembly is made by welding the two side panels and the rear panel to form what is known as the "balloon" assembly. The two end assemblies are placed in a large fixture and electrically welded together, after which the assembled unit is welded to the Airflow bridge-type frame.

Welding of the various body parts is done on "hydromatic" welding machines similar to those developed at and in use in the plant of the Dodge Brothers Corp., described in detail in *THE IRON AGE* of June 21, page 22. These machines feature unusual speed as well as uniform quality of welding.

All Airflow bodies are made rust resistant by the Parcolite process, involving seven operations. They first are given an alkali wash to remove grease and oil. The alkali is washed off when bodies pass through a hot water rinse. Six pounds of Parcolite are sprayed on each body, which moves through an induction-type oven at a temperature of 225 deg. F. The drying time is 9 min.

When bodies emerge from the oven the active elements of Parcolite have set up a phosphate surface, leaving an inert material consisting of a fine powder residue which has absorbed all grease and dirt. This residue is removed when the body goes through an automatic water wash. Bodies then go into a second drying oven having a temperature of 225 deg. F., remaining there 7 min. They emerge from this oven ready to be painted. The entire process takes less than 30 min. for each body, as the bodies move rapidly from one operation to the next on a drag chain conveyor.

Parcoliting not only serves as a rust preventive, but also provides a base for the painting. The phosphate surface of the steel is slightly absorbent so that when the final paint finish dries it is anchored permanently. If the paint and rustproof coat are knocked off accidentally, rust will not spread to the surrounding area.



Tempered air is supplied spray booths and drying ovens by this air conditioning plant located on the roof of the body plant. Equipment consists of 196 butane gas burners, 10 intake fans having a total capacity of 1,200,000 cu. ft. per min., and 114 discharge fans of 10,000 cu. ft. per min. capacity each. The amount of butane gas burned by this plant is enough to supply a city of 216,000 population.

It has taken the great steel industry a long time to get around to specialty selling. But now that it has gotten around to it, it is beginning to do a pretty good job of it. I believe it will be readily granted that the steel companies that have set up the best specialty marketing organizations have achieved, proportionately, the most satisfactory results during the depression.

Almost every business of importance in this country owes much of its success to specialty marketing. In fact, it is not too much to say that it was largely through the selling of specialties that the United States achieved its commercial eminence.

Yankee ingenuity has been creating a steady flow of new products for the last 150 years. Most of these articles have been successful because they were effectively marketed—sold through, what in sales parlance would be called, "specialty sales methods." The names of these products is legion—Jello, Gillette Safety Razor, Waterman Fountain Pen, Corbin Locks, Swift's Bacon, Armour's Hams, Oneida Silverware, Seth Thomas Clocks, Wrigley's Chewing Gum, Whitman's Candy, Remington Typewriters, Royal Baking Powder, Shredded Wheat, Timken Bearings, McCormick Harvesters, Stanley Hardware, Simmons' Beds, to mention just a few.

### What Is Specialty Selling?

In fact, most of the great commercial names in the United States attained their eminence as a result of specialty selling. What do we mean by specialty selling? It is any promotional effort that may be used to market a specialty. And a specialty is any product that bears marks of difference from other products or material in the same general class, or that can be distinguished from competing products because of a trademark or a brand name or a package or by some other sign of distinction. Any product becomes a specialty when it is selected from a general line and given a trade-name of its own or when it may be given exclusive features of any sort. A specialty may be a single product or a whole line. Usually a line of this kind is composed of a number of specialties.

### Some Outstanding Examples

When King Gillette originated a means of putting a guard on a razor blade, he developed a specialty. Emery Mapes and a man by the name of Clifford were running a flour mill in North Dakota. They thought of taking the heart of the kernel of wheat,

packaging it and of calling the resulting product "Cream of Wheat." Thus was started one of the most profitable specialties that this country has yet known. Phil Corbin was working for the Russell & Erwin Manufacturing Company, at that time a producer of quite a line of general hardware, now making builders' hardware exclusively. Young Corbin decided to hang out his own shingle, at first, making balls for oxen horns, bull rings and metal boot jacks. Eventually he evolved into the lock business. In that original business Corbin made a line of specialties, and certainly when he graduated into lock production he was in specialty manufacturing.

I have selected these three brief stories to explain with concrete illustrations what I mean by a specialty. Broadly speaking a specialty business connotes the idea of a relatively small line that a manufacturer controls in one way or another. Of course success with a specialty does not result from specialization in manufacturing, but rather from the concentrated selling effort which such specialization makes possible. It is to specialty marketing and not to specialty manufacturing that we should extend our orchids of commendation.

### Concentrated Sales Effort

Specialty selling differs from other types of selling in a number of ways. The principal difference is that in specialty selling the effort is concentrated

on one product or on a comparatively short line. That is the main reason why specialty methods are so effective. When a long line of articles are offered for sale, the salesman or the sales literature must scatter the arguments over too many products. Not enough emphasis is placed on any one thing. The buyer is not induced to concentrate on anything, with the result that his mind tries to take in too much and winds up by not being impressed at all.

In specialty marketing, on the other hand, the article that is being featured is spotlighted. The prospective buyer is forced to concentrate on it. He is not allowed to wander aimlessly among too much merchandise. He is compelled to give his undivided attention to what the seller is offering.

Another importance is that "regular" selling depends largely on old-line distribution. The "specialty" type of selling may use old-line distribution, but it never relies too heavily on it. It hustles for its own business.

By old-line distribution, I mean, marketing through the usual trade channels—from manufacturer to wholesaler to retailer or their equivalent. Where manufacturers sell in this way, they customarily let the distributors do most of the work. The manufacturer's selling job ceases as soon as he turns his product over to the wholesaler.

But when the producer uses specialty selling methods, he continues a sales push behind his product until it

# Specialty Selling

By JOHN ALLEN MURPHY

WHAT it is, how it is being used by numerous industries and how the steel business is beginning to profit from its employment.



reaches the consumer. In some cases, he does not stop promoting it until it is actually consumed. He generally uses the marketing facilities of distributors, but he helps them to sell through every step of the product's journey to the ultimate consumer.

### It Speeds Things Up

The introduction of specialty selling methods will nearly always speed up a business, particularly if it had allowed itself to get into a rut, or if it was suffering from "full-line inertia." One of our oldest and largest manufacturers in a certain engineering line, had allowed himself to get into this condition. The company's basic trouble was that its salesmen had too many things to sell. As a result the men concentrated on the products that they liked to sell, or on those that sold the easiest or on the articles that run into the largest

volume. If a hundred thousand dollar order was in the offing, the salesman assigned to the job camped under it until the contract was signed. Sometimes the closing of the sale would take months. In the meantime the numerous other products that the salesman had for sale were neglected. The other prospects in his territory were given absent treatment. At that, the salesman was only doing his duty. He could not be censured for choosing to go after a live prospect that had a large order to place and for side-tracking a number of may-be prospects who at best would have only small orders. As a matter of fact the system worked well as far as it went. The company was getting more than its share of the engineering business being placed in its field. At the same time it was losing virtually all of the vastly more profitable small-unit business that was also being placed. Actually the volume obtainable on this

small stuff was larger than was to be had on the heavier line.

The problem was complicated by the fact that a number of small concerns sprang up, who specialized in various items in the large company's non-engineering lines. With only a few products to sell these small manufacturers were able to put it all over their big rival. They were able to concentrate, whereas the larger manufacturer had to scatter his effort over several hundred things.

The big manufacturer finally overcame his difficulties in a most interesting way. He set up a crew of specialty salesmen, who sold the small units exclusively. They were kept out of the engineering end of the business entirely, and the engineering-salesmen were not permitted to meddle with the small line under any circumstances. The specialty men were restricted to five items. The composition of these five articles changed with the seasons. If the selling season of a product lasted for only three months, the salesman carried it for only that period. In this way the specialty organization was able to handle about twenty different things during the year. They never had too much to sell. They were able to devote enough effort to every item in that line to do it full justice. With this system the manufacturer doubled his business, without increasing the percentage rate of his sales expense.

---

Editor's Note: This is the first of a series of observations which, strangely enough, are exactly what they purport to be. In other words, they come from the daily diary of a real boss; a prominent executive in the metal-working industry who prefers to remain an anonymous author.

---

### The Boss's Diary

Bert fed up a problem today. He's enough years out of college to begin worrying why he isn't in the five digit class and is beginning to ask questions. The joker in the deck is that just the other day I asked Bert's chief if he was satisfied to build on Bert and he had to "guess" and "presume". As Bert's chief and I talked it over we were both disgusted to discover that neither of us could clearly define the trouble.

Somehow as I ponder Bert's problem, my mind reverts to a few months ago when Mike got through. Mike is Russian. He never saw a college. He cannot express himself in English, but when he got through the gang felt blue. Worried frowns cropped out on many a forehead and "what to do next" was on every tongue.

As I ponder these two opposite problems a third line of thought comes to mind. It's the deep truth of an ancient and venerable philosophy expressed in Holy Writ thus—"Give and it shall be given unto you, good measure, pressed down and shaken together and running over shall men give into your bosom."

### Pushing Ball Bearings

An even more striking illustration of the way specialty selling is coming into the industrial field, is furnished us in the methods of one of the largest ball bearing manufacturers. For a number of years this company had its sales force organized along industrial lines. That is, its salesmen covered industries rather than geographical territories. Some of its men looked after automotive accounts. Others were assigned to steel mills. Still others covered the airplane industry or textile plants or paper mills or the machine tool builders, etc. It was felt that in order to serve any field properly, a representative should have expert knowledge of it, preferably be an engineer in that line.

This plan worked satisfactorily as far as sales volume and service to the customer were concerned, but it was altogether too costly. There was too much duplication of effort, too many long trips, too much time spent in actual traveling. Not enough time was being spent in any specific territory. Many regular customers, who

(Concluded on Page 81)



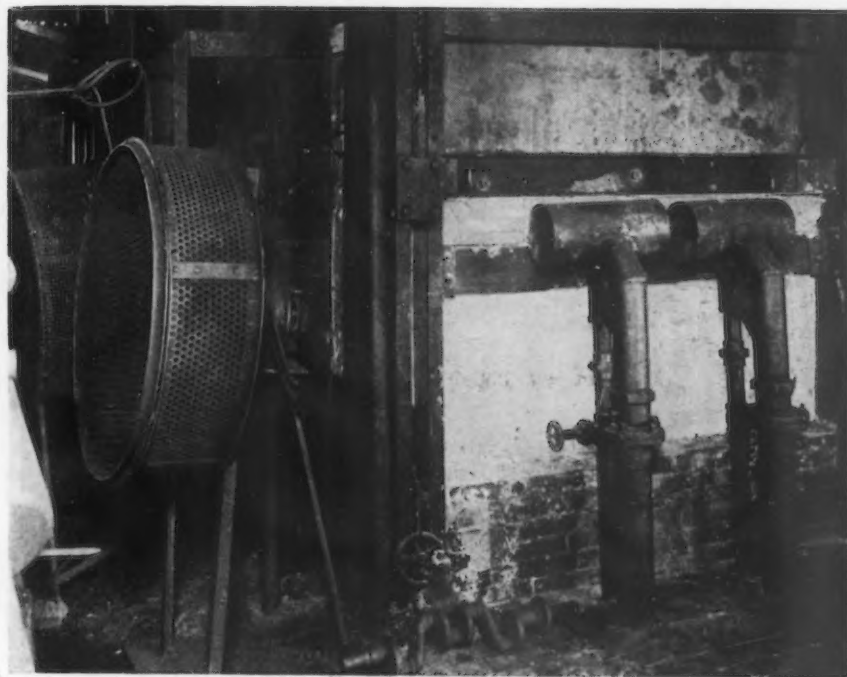


Fig. 1—Forge furnace equipped with two newly developed gas diffusion burners which replace 16 oil burners. This furnace now heats billets fast enough to keep two hammers busy. The furnace is of the continuous pusher type and heats 150 billets per hr.

# Gas Heating For Forging Furnaces

By J. B. NEALEY  
American Gas Association

**T**HE reduction of scaling of forgings to a minimum results in a saving of dies and also lowers machining costs, etc. To attain these results is the goal of every forger, and many plants have been more satisfied with gas than with other types of fuel. Among the types of gas burners most successful in firing furnaces is the recently introduced diffusion burner. However, there has now appeared a new burner, of the same type, with some more or less radical changes in design and operation.

This new gas burner also utilizes the basic principle of alternating layers of strata of gas and air with combustion resulting from their diffusion or intermingling. The idea of a lower strata of raw gas, as a protecting blanket for the steel, is also retained but, in some cases, a small per cent of air is added.

The principal change in the new burner consists in projecting the different strata at different velocities. This is predicated on the fact that there is a direct relation between the ignition velocity of the constituents of the heating gases and the applied velocities of the various strata by which the rate of diffusion and the radiant heat emissivity can be controlled.

This works out practically by introducing the gas and air, through the burner into the furnace, at the same pressure (10 oz.), and the smaller size of the gas orifice results in a greater velocity.

The first to use this burner is the Transue & Williams Co., Alliance, Ohio, one of the country's largest

forgers. Forgings made by this concern range from  $\frac{1}{4}$  lb. up to 600 lb., and the plant has a capacity for approximately 50,000 tons of forgings annually. At the present time this company is changing its oil furnaces to gas firing. As oil usually requires more space for combustion than gas, the Dutch ovens were removed, where they were employed or the furnaces were made smaller, usually by lowering the arches, whenever larger heating chambers were utilized instead of Dutch ovens.

All of the furnaces of the company are of brick and refractory block construction and are encased in steel, but they vary in size and design. One of them, recently converted, is 15 ft. x  $6\frac{1}{2}$  ft. x 4 ft. high; it has two doors and is fired with two modified, diffusion type burners located in one end. These burners are cylindrical in shape and have six slots for gas and air, with different mixtures and at different velocities. Instead of shooting a raw gas blanket from the lower slot, 1 per cent air is added. This furnace serves an 8000 lb. hammer. A blower furnishes air at 10 oz. pressure to the burners.

It might be stated that the gas fired forging furnaces in this plant use from 5000 to 12,000 cu. ft. of gas per hr., depending upon size, etc., or 40 cu. ft. of gas per cu. ft. of furnace volume. The gas consumption per ton of steel is held between 1400 and 2000 cu. ft. This is 1050 B.t.u. gas containing 82 per cent methane and 14 per cent ethane.

To obtain efficient operation with diffusion burners, the furnace roof

should not be over 18 or 20 in. above the work. The scale is thus reduced to the practical minimum, and where pickling is necessary it is quite simple as the scale is very loose. What scale there is does practically no harm to the dies. In fact, die life has been increased 20 to 21 per cent on one particular forging design at the Williams plant.

Another furnace used for making banjo axles and miscellaneous forgings is of the slot type and is 14 ft. long by 5 ft. wide inside. Heat is supplied through two diffusion burners, one located on each rear corner, and each burner has four slots. A raw gas blanket is used to envelop the work which is heated to 2225 deg. F. for forging. The gas blanket is not turned on until after the furnace has come up to heat and has been charged. The burners used are 15 in. long and 8 in. in diameter but the sizes would vary with different furnaces. A separate motor blower furnishes air for the burners on each furnace.

This unit has an automatic temperature control, and the 8 in. air line and the  $1\frac{1}{2}$  in. gas line are placed close enough together so that the same motor will simultaneously operate a valve in each. A thermocouple, potentiometer type controller and recording pyrometer complete the equipment and intermittently operate the motor to increase or decrease the fuel flow by means of the valves when the furnace temperature varies from the degree set on the indicator.

Crankshafts are made in another furnace from billets  $2\frac{1}{2}$  x  $2\frac{1}{2}$  x 26 in.

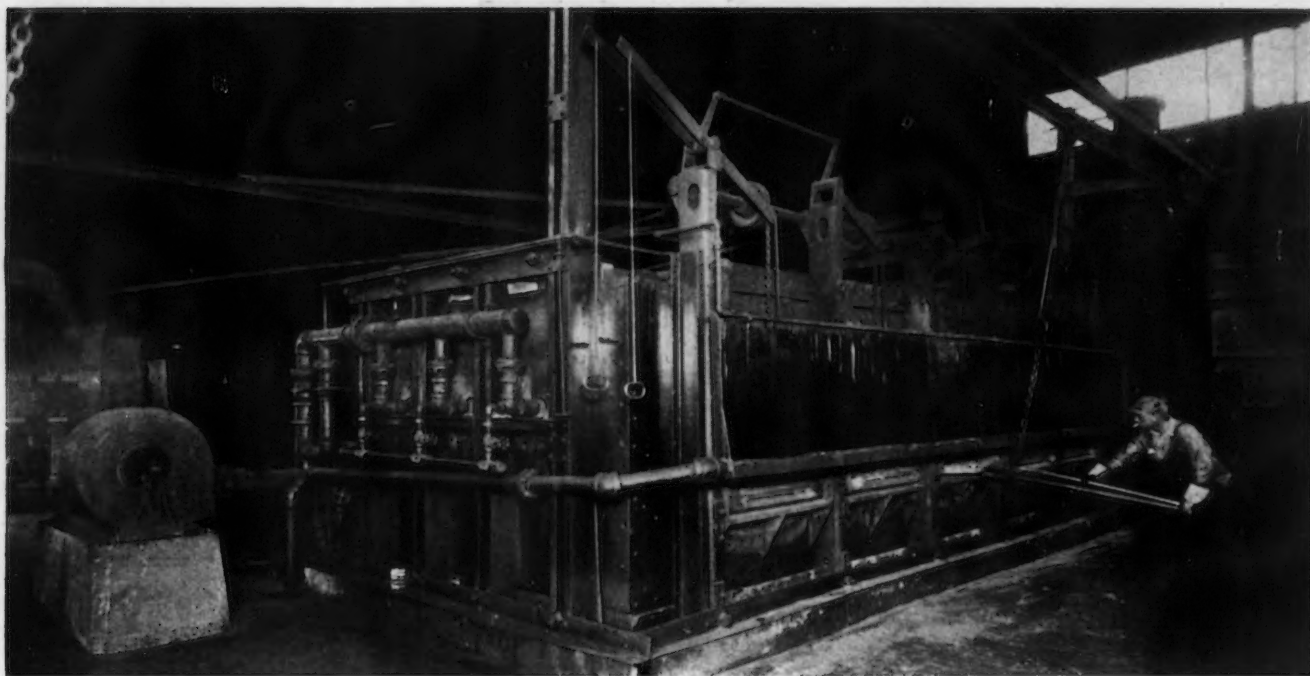


Fig. 2—Gas fired forging furnace equipped with older type of nozzle mixing gas burner. This was converted from oil burning. A single blower supplies air to all the burners. A potentiometer type thermocouple control automatically regulates the temperature.

in size heated in a continuous pusher type furnace. These billets are heated at the rate of approximately 180 per hr. and this keeps two hammer crews busy. The furnace is 41 ft. long, 4 ft. wide and 4½ ft. high inside, and is fired with two diffusion gas burners, as shown in Fig. 1. They are located at the discharge end (counterflow principle) have four rows of slots for gas and air and shoot flames the entire length of the furnace. A raw gas blanket is used. These two gas burners replaced 16 large oil burners, and the work is now heated with a gas consumption of 2092 cu. ft. per ton of steel, including the spacers. If the furnace was used to capacity, decreased in cross sectional area and recuperation added, this consumption could be lowered to 1100 cu. ft. The life of the dies in which these cranks are forged has been increased 21 per cent. The temperature in the preheat zone is 1850 deg. F. while that in the high heat zone is 2300 deg. F. It takes only 3 hr. to bring the furnace up to temperature with gas. The heating rate of the furnace is 52.4 lb. of steel per sq. ft. of hearth area per hr.

Other furnaces at the Alliance plant are equipped with an older type of nozzle mixing gas burner, but the air is still supplied from a motor driven blower for each furnace. One of these furnaces, shown in Fig. 2, serves another 8000 lb. hammer, and it is 20 ft. long, 10 ft. wide and 6 ft. high. A refractory wall inside separates the furnace into two chambers, one a third of the size of the other, and there are three doors. Firing is with six nozzle mixing gas burners, three located in each end. A single

blower furnishes air for all six burners at 10 oz. pressure through a 6 in. line. Gas at 8 oz. is delivered through a 2 in. line. This furnace is provided with an automatic temperature control similar to the one described.

A different kind of inspirator type gas burner is also used at this plant. Similar burners are used on a continuous normalizing furnace. This furnace is 5 x 27 x 6½ ft. high and has three longitudinal skids on the hearth along which the work, on shoes, is pushed by a motor driven cam and link mechanism. The shoes are returned to the charging end by a slat type traveling conveyor. The furnace is divided into three zones, preheat, high heat and cooling with two burners firing each of the first two zones and four for the third. All of these fire from one side.

Each of the first two zones, preheat and high heat, is provided with a separate automatic temperature control of the potentiometer type. Air is supplied by blower at 6 oz. pressure while the gas which is delivered at 3 oz. is reduced to atmospheric pressure in a zero governor. Fuel flow regulation is obtained by a motor valve in the air line only. The pusher is on a time clock by which the length of the heating period is regulated. Another continuous normalizing furnace, in which steel stampings are treated is heated with the diffusion type gas burners. This unit is 26 x 5 x 3½ ft. high, inside, and the conveyor consists of two closed loops of chain supported between motor driven pulleys. The stampings are carried through on these chains. The length of the gas

flame is regulated to the length of the furnace, and the work, traveling in the same direction, is in the furnace only from 1 to 2½ min. Heating an average of 5400 lb. of steel hourly with a gas consumption of 2650 cu. ft., the consumption figures are at 0.49 cu. ft. of gas per lb. of steel. The heating rate of this unit will average 41½ lb. of steel per sq. ft. of hearth area per hr.

## High-Tensile Steels

TWO illustrated pamphlets, printed in color and describing the properties and applications of USS Cor-ten, Man-ten and Sil-ten high-tensile steels, are being distributed by subsidiaries of the United States Steel Corp. The smaller one, in folder form, contains questions and answers on pertinent points of interest to potential users. The larger publication, an eight-page brochure, gives the properties of the steels, outlines their reaction to forming and pressing, welding, riveting and finishing, and summarizes advantages accruing from their use in the construction of transportation equipment.

Conditions in the French iron and steel industry remain extremely unfavorable. So far there have been no indications of an autumn revival and it is feared that the work provided by the unemployment program will be too late to prevent further laying off of labor. Hopes of improvement are centered on the export markets.



# Philadelphia Is Host to World's Foundrymen

**T**HE thirty-eighth annual convention and exposition of the American Foundrymen's Association was held Oct. 22 to 26 at Convention Hall in Philadelphia, the city where the first convention was staged in 1896. The first unlimited operating foundry exhibit since 1930 was open to the trade for the entire week. Over 3000 people paid admission, there were more than 60 foreign visitors, and about 110 American manufacturers exhibited new types of equipment and improvements in foundry supplies.

This convention and exposition were combined with the fifth International Foundry Congress. The first international congress was held in Paris, France, in 1923, with 40 Americans attending. Since then, international congresses have been held in Detroit in 1926, London in 1929 and again in Paris in 1932.

In this current congress, the fore part of Monday, Oct. 22, was occupied with registering. The remainder of the day was devoted to educational courses on sand control and gray iron technique. The congress was officially

opened on Tuesday with Frank J. Lanahan, president of the American Foundrymen's Association, presiding. The mayor of Philadelphia also gave a short welcome to the delegates.

On Tuesday the visitors attended the various technical sessions and visited the industrial exhibits. A reception was given to the overseas guests in the evening at the Franklin Institute.

Two features of the annual banquet, held at the Bellevue-Stratford Hotel on Wednesday evening, were a short talk by Andrew W. Robertson and the presentation of the J. H. Whiting gold medal of the American Foundrymen's Association to Arnold Lenz. Mr. Robertson is chairman of the board of directors of Westinghouse Electric & Mfg. Co., and Mr. Lenz is superintendent of the Saginaw, Mich., gray iron foundry of the General Motors Corp. Mr. Robertson stated, in part:

## Sees Need for Curb on Competition

"This problem which now faces American business differs from those

which faced it a generation ago. Until after the Civil War this country was a virgin country. We had millions of acres of unoccupied land. Our natural resources were being discovered and developed. There was plenty for every one. Competition, which is the natural environment of rugged individualism, applied either to the individual or the corporation, was thrust upon us by our laws and it seemed to suit our environment. It became apparent, however, after the collapse of the big boom, that we needed some protection from the enforced competitive position which our virgin country and civilization had developed. The NRA was intended to supply these new conditions in the form of certain restrictions on so-called cut-throat competition.

## Changed Methods Inevitable

"If business proposes to live in the next decade," continued Mr. Robertson, "exactly as it has in the past, the mortality will be terrific. History teaches us that the aftermath of every great upheaval such as we have experienced in the past few years is a



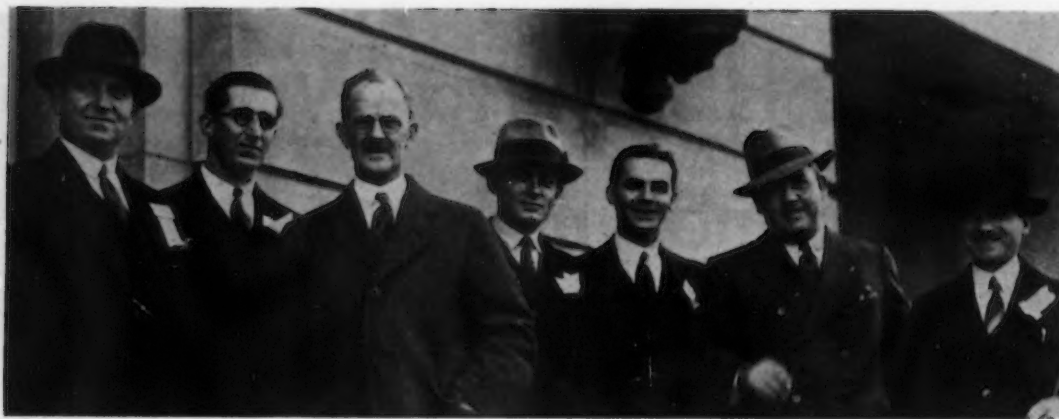
**T**O Arnold Lenz was awarded the J. H. Whiting gold medal presented by the American Foundrymen's Association for conspicuous services to the foundry industry, especially in the field of management.

**T**HE president of the American Foundrymen's Association, Frank J. Lanahan (right), with J. Leonard of Belgium (left) and A. Brizon of France (middle). J. Leonard is acting president of the International Committee of Foundry Technical Associations and president and official representative of the Association Technique de Fonderie de Belgique, Grivegnée. A. Brizon is vice-president of the Association Technique de Fonderie de France, Fonderie A. Brizon, Coubevoie (Seine).



**T**HE new president of the American Foundrymen's Association, Dan M. Avey is editor of *Foundry*, and has been affiliated with the Foundrymen's Association for many years.





THE mayor of Philadelphia, J. Hampton Moore (with top coat), and the French delegation to the Fifth International Foundry Congress. Said the mayor in the official welcome: "You men have rendered a definite service to this and other countries. You may not man the ships of commerce but you do provide the raw material, and we are proud to have such men here with us in this city."

change in our social and business life—change in methods of doing and living. We can hardly expect the same activity in the future as in the past when we didn't have so many saturated markets.

"Today many of our markets have so nearly reached the saturation point that they provide not much more than renewal business, which would fall short of supplying our factories with a sufficient load. Unless we have some regulation which prevents cut-throat competition, we are going to devour each other in short order. Such being the case, some kind of an ordered or planned economy seems advisable, but the wrong kind of a plan or more plans than can be administered would probably be worse than no plan.

"Whatever kind of planned economy we have," concluded Mr. Robertson, "it must be built upon a sound foundation of honest economy, using 'economy' with the old-fashioned meaning. I believe we may fairly assume that some kind of sensible adjustment of our many problems, which can only be done by wise order and planning carried out with good faith and good will, will be developed

in the near future. As some one has wisely said: 'Nothing can keep back the dawn.'"

#### Arnold Lenz Honored

Following Mr. Robertson's address, Gen. T. S. Hammond, Whiting Corp., Harvey, Ill., and the chairman of the board of awards, presented the John Hill Whiting Medal to Arnold Lenz. He said:

"In these days, when we hear so much about doing away with rugged individuals and rugged individualism, it is a pleasure to pay our respects to a man who has made his way to the top in an industry which from necessity has developed many rugged individuals. Arnold Lenz, born in Germany in 1888, apprenticed at the age of 14, displayed even in those early years the ambition and determination which have made him one of this country's foremost foundrymen. He attended night school during all the four years of his apprenticeship. In 1906, at the age of 18, he came to the States and worked his way through the New York Normal School.

"He has worked as a molder, core-maker, melter, foreman, superinten-

dent, manager, and has held nearly every responsible position in a foundry, including instructor. He was recently elected president and chairman of the board of directors of the General Motors Institute.

"For his contributions to the development of the foundry industry and especially for his work on the production of large quantities of automotive castings, Mr. Lenz was given the honorary degree of doctor of engineering by the University of Aachen, Germany, in 1933.

"Now Mr. Lenz has outgrown the foundry, and during this difficult period of depression and operation under the NRA, Mr. Lenz has shown unusual leadership and ability in the most difficult problem of management, that of handling the human element in industry."

#### Statue Presented to John A. Penton

Following this tribute to Mr. Lenz, President Frank J. Lanahan presented a bronze statue to John A. Penton. In his citation, Mr. Lanahan said:

"Two-score and two years ago you brought to the inarticulate American foundry industry a vision of national unity. As founder, editor and publisher of *Foundry* you emphasized the bond of common interest existing between foundrymen and inspired them to consider the advantages of co-operating for their mutual benefit. Through printed page and by virtue of your contacts with thousands of acquaintances in every community where castings were poured you contributed more than any other individual to the creation of an inspired industry consciousness.

"Later when this newly born spirit culminated in plans for the first national meeting of foundrymen in Philadelphia, you voluntarily, unofficially and at your own expense, stimulated widespread interest in the event, insuring the representative at-



TWO of the German delegation leaving the International Foundry Congress. Prof. Dr. Ing. Eugen Piwowsky (left) of the Giesserei-Institut der Technischen Hochschule, Aachen, was the official representative of the German Foundrymen's Association. Dr. Piwowsky's companion is Dr. Hans Jungbluth of the A. G. Krupp Corp., Essen, Germany.

tendance which made possible the founding of the American Foundrymen's Association. During the first year of the association's existence, as secretary you nursed the organization through its most critical period, serving virtually as executive officer and board of directors.

"For this conspicuous service to the industry, for your unwavering interest and support of the American Foundrymen's Association from the date of its founding, and for the inspiration you have given to thousands of foundrymen everywhere, the Amer-

ican Foundrymen's Association, by the unanimous action of its board of directors, desires to record its enduring esteem and appreciation."

On the day following, Thursday, Oct. 25, Arnold Lenz gave an extensive address on the occasion of the annual A.F.A. business meeting. Discussing the technical aspect of the foundry business as it is today, Mr. Lenz said:

"Of late, or about since the beginning of the depression, there seems to be a swinging of first interest from mechanical equipment to the develop-

ment of high-strength cast irons, usually by duplexing in the electric furnace or converter. Our present economic condition, no doubt, is responsible for this shift."

The final morning of the exposition, Friday, was devoted to technical sessions on sand control, the testing of cast iron and affiliated subjects. In the afternoon many of the visitors made a visit to the plant of Bethlehem Steel Co., Bethlehem, Pa. They were shown through the ferrous and non-ferrous foundries, forging and rolling plants, and open-hearths.

## Foundrymen Review Practical Melting And Casting Problems

IN this post-war industrial period it has been a prime necessity for founders to keep abreast of technical developments and anticipate the demands of users. Likewise the profitable operation of a foundry in the future will demand a knowledge of better melting and pouring techniques, a familiarity with improved and new equipment, and a real understanding of the multitudinous variables and possibilities related to every-day metal casting problems.

For these reasons, therefore, the technical sessions of the American Foundrymen's Association are performing a decided service. For they make available information concerning practical problems in a practical manner, and the open discussions provide for a dissemination of experiences long before they appear in print. All of this naturally begets an enthusiastic response from those attending the meetings.

The discussions and papers presented at the fifth international foundry congress and thirty-eighth annual convention and exposition of the American Foundrymen's Association in Philadelphia Convention Hall, Oct. 22 to 26, were varied. The program included an impressive session on porosity in steel castings, sessions on melting and molding developments in the ferrous and non-ferrous divisions, and an assortment of manuscripts relative to malleable and gray iron castings.

### Porosity in Steel Castings

REALIZATION of the undesirability of porosity in steel castings is as old as the art itself. However, within

### Ferrous Founding

Mechanics of Porosity  
Preventing Porosity in Steel Castings  
Relation of Molds and Cores to Porosity  
Effect of Copper in Malleable Iron  
Fatigue of High-Strength Cast Iron  
High-Chromium Cast Iron

### Non-Ferrous Founding

Melting in a Cupola-Type Furnace  
Deoxidation and Degasification

recent years it has been given considerable attention and certain remedial practices have been developed. Of these might be mentioned the use of aluminum in the metal and more strict control over sand. In general, the plant metallurgists and melters unite in condemning the sand, whereas the molding foreman and sand supervisors naturally are usually convinced that the trouble lies mainly in the metal.

In a paper dealing with the mechanics of porosity in steel castings, R. C. Woodward, superintendent of the George H. Smith Steel Castings Co., Milwaukee, confined the examination to the type of porosity which is seen just under the surface of castings, often called "pinhole" porosity. Although much has been written on this imperfection, little has been advanced as to how the alleged causes produce the defect.

Mr. Woodward described some of

the data collected at one steel foundry which had over 20,000 castings rejected due to porosity over a period of six years. Not only were small castings affected, but many weighing up to 50 lb. were likewise afflicted. Speaking generally of these data, the assumption of seasonal porosity is somewhat substantiated. In general, there were more pieces rejected in summer months, and for some years this rise during June and adjacent periods was quite marked. Possible factors causing this were sought, and by a process of elimination the materials used for binders were most suspected. Considering that surface conditions may cause this defect, a concentration of slag-forming particles on the mold surfaces should show its influence on the casting. To test this, two molds of the same pattern were used, one of which was liberally sprayed with a 10 per cent solution of sodium hydrate. This mold was not dried before spraying and it subsequently produced a very porous casting. This experiment was repeated a number of times, and the expected porous result was generally yielded although it varied widely in degree.

Some of the specimens having excessive porosity were examined under a microscope, and it was found that there were also excessive non-metallic impurities in close proximity to the pin holes. The non-metallics were found to be silicious, with some ferric iron, and probably some alkalies and alkaline earths in small amounts. Speculating as to what relation, if any, these inclusions might have to the offensive pin holes, Mr. Woodward



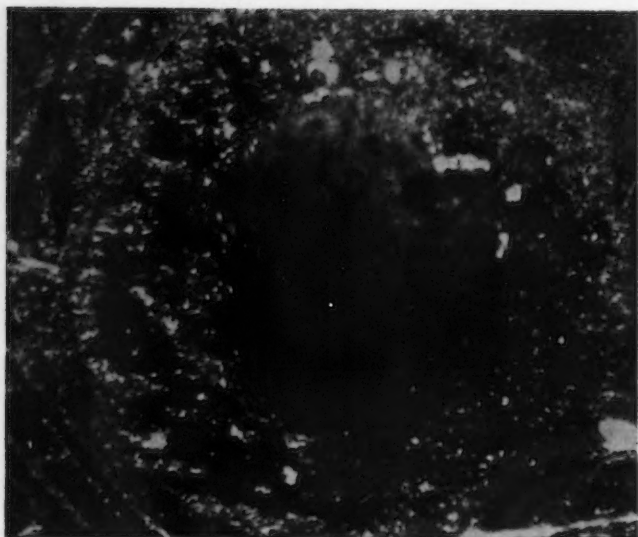


FIG. 1—Is "pin hole" porosity in castings caused by mold gases entering the skin through surface inclusions which remain liquid after the envelope is solid? At 50 diameters this porous cavity is seen to have a ring of slag at the neck.

assumed that excessive inclusions throughout a cross-section would probably mean excessive inclusions on the surface also. Special consideration was then given to the ones embedded in the surface.

Molten metal in the interior of a green sand mold solidifies at about 2500 deg. F., but the inclusions often freeze at a temperature as much as 1000 deg. F. less than their supporting steel envelope. It can be visualized then that there is an instant in the freezing cycle of a casting when the envelope is solid, the surface inclusions liquid, with mold gases acting against the entire surface, and the interior ferrostatic pressure practically nil. When these circumstances exist in combination, it is possible that a minute amount of mold gas could enter the casting through the inclusions. It would meet with a much higher temperature and be forced to expand. Some of it perhaps would be ejected from the casting, but a cavity would be formed in the casting just under the skin where the metal would still be plastic. The damage would thus be done.

If this theory has a basis of fact, sufficient searching should find pin holes with the non-metallic matter in place, pierced by the hole through which the gas entered. Mr. Woodward said they are not hard to find, and he exhibited several microphotos showing this condition. In Fig. 1 is shown one fairly large cavity with an encircling ring of slag.

#### Atmosphere Pickup May Cause Porosity

The mere contact of liquid steel with the atmosphere, or with any material that may form gas, may develop a condition in the metal ultimately manifested by porosity. A number of comments along this line

were advanced by R. A. Bull, consultant on steel castings at Chicago. His remarks stressed the receptive condition of liquid steel to the influence of every element which may be present as a constituent of the shop atmosphere, and of the linings of furnace spouts and pouring ladles. Thus a tendency toward porosity may be present in the steel even prior to entry of the metal into the pouring cup of the mold.

Because a shop atmosphere presents the opportunity of an oxygen pickup by the steel, metal that has minimum contact with the atmosphere from the time it is tapped until it is poured into a mold obviously has the least opportunity to become contaminated in its necessary transfer. Of course this means that a bottom-pour ladle offers the least opportunity for deterioration by means of oxygen.

Since it is gas and not merely oxygen which founders want to eliminate, and since there are several gases present in the steel, Major Bull suggested that "degasification" rather than "deoxidation" would be the more appropriate term to use in connection with the final efforts to condition steel for the prevention of porosity. It was pointed out that much work has been done to find a substitute for aluminum, however without success. This desirable material should have aluminum's marked affinity for gas, but it must not injuriously influence the ductility of steel in the manner frequently demonstrated when aluminum is introduced and test bars subsequently pulled.

As such a substitute material has not materialized the work of Sims and Lilliequist is of importance as it indicates that founders need not be handicapped by significant losses in ductility through the use of aluminum. Such losses may be overcome by the

introduction of compounds that serve to make the impure products caused by an aluminum addition to be much less injurious than they usually are, as ascertained by certain physical tests.

Major Bull finally pointed out that when any element or compound eliminates any gas from the steel the constituents of the gas are not actually destroyed. They have merely become transformed into what will become solids, in some kind of association with other elements. These resulting non-gaseous impurities become disseminated through the metal in the form of inclusions which are only observable under the microscope. The author found it unreasonable to imagine any degasifying element as having a lesser amount of impurities in the form of inclusions than is created when aluminum is introduced—provided that the material substituted for aluminum would be equally effective in eliminating the gas.

It thus becomes highly desirable to try to develop a practice that may make harmless the inclusions created by degasification. It has already been found that iron oxide is very useful for this purpose as it causes the inclusions developed by the introduction of aluminum to assume rounded rather than elongated shapes. This helps, inasmuch as round inclusions are less deleterious than the sharp type with respect to ductility, as indicated by the tension test.

A number of floor conditions which may cause pin holes in castings were enumerated by Major Bull. He in-

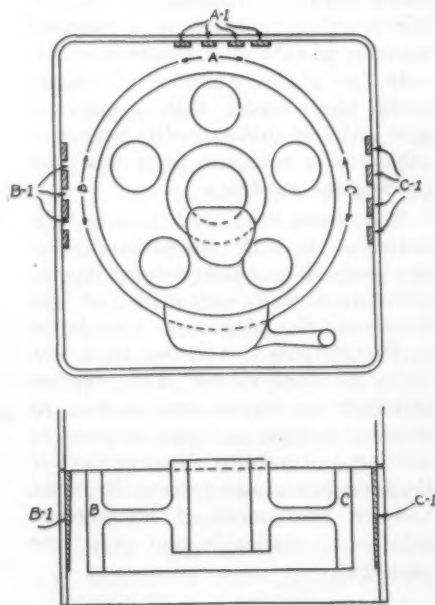


FIG. 2—Porosity areas at the points A, B, and C. This porosity was overcome by ramming tapered wood strips at points A-1, B-1 and C-1 to allow the mold gases to escape.

cluded among these the volatile matter in furnace spout and ladle lining, insufficient dryness of ladles, closed or insufficient number of steam vents in ladles, old sculls in ladles receiving fresh metal, inadequate final degasification in the ladle, exposure of tapped metal to the atmosphere, ladle additions of alloys for changing of the chemical composition of the metal, the dipping of tools in pot metal, excess moisture or dry volatile matter in facing or backing sand, low green strength of facing, oxidized metal parts of molds, excess volatile matter in cores, facing containing too large a proportion of farinaceous binders, inadequate or improperly placed core vents, and finally the improper design of castings.

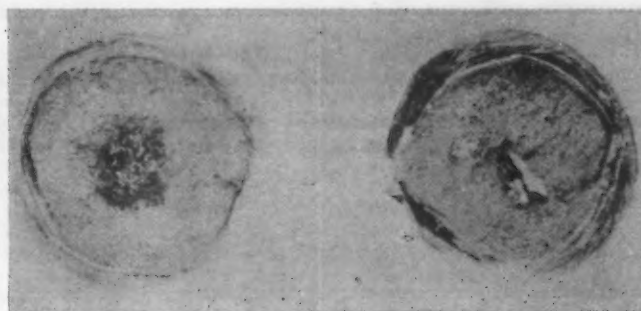
The author was of the opinion that while porosity occurs in a very troublesome degree in the steel foundry there are generally several causes operating in unison. Whatever may be the kind of steel casting under consideration, therefore, it is clear that more trouble for the producer is apt to result when several potential causes for gas cavities exist, as compared with a single cause. It thus behooves a founder to exercise unremitting skillful attention to every detail of foundry practice that is known or is thought to be controllable.

#### Reduction of Dissolved Gases Desirable

Three main sources of porosity, namely, the condition of the metal, condition of the mold material and construction of the mold, were cited by C. E. Sims, assistant director of research of American Steel Foundries. His discussion, however, was primarily concerned with the preparation of the metal and the condition of the metal as regards to dissolved gases.

Mr. Sims stated that the gases occurring in steel are carbon monoxide and carbon dioxide, which are present only as reaction products, and hydrogen and nitrogen, which are soluble as hydride and nitride respectively. A good portion of the porosity problem resolves itself into (1) reducing dissolved gases as much as possible, and (2) producing the conditions most favorable for retaining in solid solution those gases that cannot be eliminated. The conditions favoring the first step are a long vigorous boil, thorough oxidation, low residual silicon and manganese, moderate temperatures, late oxidation, and no increase in temperature after deoxidation. Conditions favoring the retention of gases in solid solution are thorough deoxidation and minimum

FIG. 3—The formation of blow holes in yellow brass rods as effected by casting temperatures; (a) is a fractured brass rod (60 Cu, 4 Pb, 0.2 Al and remainder zinc) cast at 1900 deg. F. Same brass rod (b) cast at 2000 deg. F, shows excess blow holes.



exposure after deoxidation. However, Mr. Sims stated that control through selection of charge and control of atmosphere seems both impractical and unnecessary.

One phase of the problem of porosity revolves around the fact that steel, in common with most other metals, shows a sudden decrease in its ability to hold gases in solution when the freezing point is reached. If molten steel contains sufficient gas in solution there will be an evolution of gas during freezing and part of this gas will be trapped within the body of freezing steel. A vast amount of work has been done by careful and experienced investigators on quantitative determinations of the solubility of gases in metals. However, there is a remarkable lack of agreement as to results.

The gases that are of concern in steel making include oxygen, carbon monoxide, hydrogen and nitrogen. All of these gases are practically always evolved during the vacuum fusion analysis of steel. Small quantities of water vapor and gaseous hydrocarbons are also often found. Of these gases, the first three, oxygen ( $O_2$ ), carbon monoxide ( $CO$ ), and carbon dioxide ( $CO_2$ ), have an intimate interrelationship through the reactions of the system iron-carbon-oxygen, and these three elements are always to be found in steel.

Of course the solubility of oxygen in molten steel is enormously affected by the presence of other elements, principally the so-called deoxidizers, with which it reacts to form more or less insoluble oxides or other reaction products. It has been shown by several investigators that manganese alone is a poor deoxidizer, that aluminum is considerably more effective than silicon, and that all are more efficient deoxidizers at low than at high temperatures.

There is some uncertainty regarding the solubility of carbon monoxide and carbon dioxide in steel. However, Klinger, Kinzel and Egan found supporting data which confirmed the fact that  $CO$  and  $CO_2$  are not appreciably soluble in molten steel. They are con-

sidered to be merely products of the reaction  $FeO + C \rightarrow Fe + CO$ .

The fact of the solubility of hydrogen in steel has long been established. However, the effect of most of the elements common to steel on the solubility of hydrogen is an unknown quantity, but it is a well established fact that oxygen has a large influence on the solubility and also on the action of the hydrogen that is retained. In addition it is popularly supposed that deoxidizers like manganese, silicon and aluminum have the ability to increase the solubility of hydrogen in steel, although there seems to be no direct proof of this.

There is also considerable evidence to prove the solubility of nitrogen in steel. Open-hearth steels contain from 0.003 to 0.008 per cent nitrogen, while crucible steels have but 0.0005 per cent to 0.002 per cent. The nitrogen absorbed by steel forms a stable nitride which is not easily decomposed.

It has been established from a theoretical standpoint that nitrogen absorbed by pure iron could not exceed 0.01 per cent and probably is less than 0.005 per cent. Any amount present over this quantity is probably due to the presence of impurities. There is some evidence that impurities such as manganese and more especially silicon have a profound influence on the solubility of nitrogen. It has been pointed out that silicon is the chief offender in introducing nitrogen into steel.

Experiments by Wust and Duhr on duplex steel have shown a sharp increase in nitrogen immediately following recarburization with coke. The nitrogen may have merely been in the coke, but it is more likely that the increase is due to a change in the degree of oxidation of the steel. This also probably explains the action of silicon, manganese and aluminum in apparently increasing the solubility of nitrogen in steel. The presence of these elements acts against the presence of oxygen.

With regard to the sources of gases in steel, Mr. Sims stated that hydrogen and nitrogen already are contained in pig iron and scrap that



TABLE 1  
Influence of Copper on Malleable Iron (Mechanical Properties of Commercial Heats)

| Copper<br>Per Cent | Tensile Strength<br>Lb. per Sq. In. | Yield Strength<br>Lb. per Sq. In. | Elongation<br>Per Cent<br>in 2 In. | Brinell<br>Hardness |
|--------------------|-------------------------------------|-----------------------------------|------------------------------------|---------------------|
| 0                  | 56,000                              | 36,000                            | 14.0                               | 121                 |
| 1.33               | 64,000                              | 48,500                            | 12.0                               | 135                 |
| 1.73               | 63,000                              | 47,000                            | 11.2                               | 134                 |
| 2.25               | 61,000                              | 47,000                            | 10.0                               | 137                 |
| 2.94               | 63,000                              | 47,500                            | 9.5                                | 137                 |

constitute the furnace charge. Also, the ferroalloys used in deoxidizing are known to contain both these gases. The atmosphere of an open-hearth is always rich in nitrogen and water vapor and usually contains some free hydrogen. Even if the steel is melted and covered with a slag, the chances for further gas absorption are far from nil. The gas content of slags (except of course for oxygen) is entirely an unknown quantity, yet there is room for at least a strong suspicion that slags may act as gas carriers.

A rimming steel is the most common example of a porous steel made purposely to achieve a definite end. When the steel contains an excess of hydrogen it almost invariably appears as undesirable skin-holes in the ingot. These hydrogen holes cannot be controlled with deoxidizers and can be prevented only when sufficient deoxidizer is added to produce a piping ingot, or in other words to produce a deoxidized or "killed" steel.

It has been shown that a sufficiently vigorous boil, however, will carry off enough hydrogen to prevent skin holes. The charge should be kept

low in manganese likewise to reduce the danger.

Both Major Bull and Mr. Sims stated one cause of porosity was to be found in improper types of molds and cores. This subject was elaborated into a full and decidedly inclusive paper by George Batty, technical director of the Steel Castings Development Bureau, Inc.

In discussing his subject, Mr. Batty stressed the point that the sand from which the molds are made influences porosity considerably. In sands made from silica and bonding materials, it has been found that they both influence the solidity of the casting. The diversity of types of steel castings makes it impossible to write a blanket prescription covering the composition and constitution of molding materials. Sand mixtures for both molds and cores must be devised from the large range of available materials to conform with the conditions imposed by the less mutable factors which tend to govern the system of production in any particular foundry. The author enumerated many points regarding sands and facings in the original

paper, but in summation the points emphasized were the value of an orderly system of sand control, a knowledge of the functions of grain size and grain shape in promoting the desired mold and core characteristics, the varied values and deficiencies of different bonding materials, and, in particular, the advantages of producing molds and cores which exhibit the desirable condition of increasing permeability as the distance from the mold-metal interface increases.

#### Permeability Throughout Is Essential

Regarding this permeability factor it is not sufficient that sand of adequate permeability characteristics be used in the making of steel castings but it is essential that the mold as a whole—which includes the flask or container—be of suitable permeability. The permeability characteristics of the sand are not the whole answer to the prevention of pinhole porosity. An example which is typical can be quoted to amplify this assertion.

In this case the sand was contained in impermeable flasks with the result that the excellent permeability of the sand was negated. Fig. 2 indicates a gear blank casting which, upon machining, showed three patches of porosity at the points A, B and C indicated on the figure. This casting was made on the partial reversal principle and the pattern was, therefore, not set central in the rectangular flask, but was located approximately as shown in the figure. Practically the whole of the casting was carried in the drag part of the mold and,

TABLE 2  
EFFECT OF PRECIPITATION HARDENING ON MALLEABLE CAST IRON  
(Changes in Mechanical Properties)

| Chemical composition |      |      |       |       | Tensile<br>Strength, Lb.<br>per Sq. In. | Yield<br>Strength, Lb.<br>per Sq. In. | Elongation,<br>Per Cent<br>in 2 In. | Brinell<br>Hardness | Treatment            |
|----------------------|------|------|-------|-------|---|---------------------------------------|-------------------------------------|---------------------|----------------------|
| C                    | Si   | Mn   | P     | Cu    |   |                                       |                                     |                     |                      |
| 2.36                 | 0.94 | 0.27 | 0.132 | 0.031 | 60,500                                  | 38,000                                | 14.5                                | 121                 | Annealed             |
|                      |      |      |       |       | 63,000                                  | 44,000                                | 17.7                                | 133                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 62,000                                  | 41,000                                | 16.3                                | 121                 | Reheated 930 deg. F. |
| 2.31                 | 1.08 | 0.22 | 0.109 | 0.63  | 58,500                                  | 42,000                                | 22.2                                | 121                 | Annealed             |
|                      |      |      |       |       | 61,000                                  | 45,500                                | 23.7                                | 134                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 60,500                                  | 44,000                                | 24.5                                | 130                 | Reheated 930 deg. F. |
| 2.38                 | 1.13 | 0.38 | 0.128 | 1.30  | 58,500                                  | 44,000                                | 15.5                                | 128                 | Annealed             |
|                      |      |      |       |       | 60,000                                  | 48,000                                | 15.7                                | 141                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 65,500                                  | 54,000                                | 14.0                                | 159                 | Reheated 930 deg. F. |
| 2.33                 | 1.11 | 0.27 | 0.122 | 2.01  | 59,500                                  | 45,000                                | 18.5                                | 128                 | Annealed             |
|                      |      |      |       |       | 62,000                                  | 50,000                                | 18.5                                | 139                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 70,000                                  | 59,000                                | 15.2                                | 165                 | Reheated 930 deg. F. |
| 2.76                 | 1.01 | 0.26 | 0.128 | 1.25  | 56,000                                  | 45,000                                | 9.5                                 | 128                 | Annealed             |
|                      |      |      |       |       | 56,500                                  | 47,000                                | 11.5                                | 134                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 65,000                                  | 57,000                                | 7.2                                 | 159                 | Reheated 930 deg. F. |
| 2.29                 | 1.19 | 0.25 | 0.105 | 0.60  | 57,000                                  | 40,000                                | 20.2                                | 122                 | Annealed             |
|                      |      |      |       |       | 59,000                                  | 45,000                                | 22.7                                | 134                 | 1350 to 1375 deg. F. |
|                      |      |      |       |       | 60,000                                  | 44,500                                | 22.7                                | 133                 | Reheated 930 deg. F. |

by reason of the extravagant overheating of the relatively narrow belt of sand at points A-1, B-1 and C-1, and also by reason of the fact that proper venting was not ensured at these places, mold gases were generated at such a rate in excess of the venting properties of the mold at these locations that the casting was punctured by the immigrant mold gases. Porous places were consequently produced.

This example might be quoted as one illustrating a molder's failure to take proper safeguards, particularly so in view of the fact that replace castings were made in the same flasks, but with molded vents produced at the locations A-1, B-1 and C-1. These vents were produced by ramming up tapered strips of wood in close contact with the sides of the flask and withdrawing these after the pattern had been rapped. These replace castings were quite satisfactory in having no areas of porosity.

### Gray and Malleable Irons

Of equal importance to the symposium on porosity were the sessions devoted to gray and malleable irons. One paper of particular interest in this section was a discussion of the effect of copper in malleable iron by C. H. Lorig of the Battelle Memorial Institute and C. S. Smith of the American Brass Co.

The alloying of malleable cast iron with copper is not new. It frequently occurs as an element not intentionally added but which enters the iron through its presence in the furnace charge. Yet it is sometimes

purposely added, primarily to improve the atmospheric and acid-corrosion resistance of the iron. In either instance the quantity of copper may be but a few tenths of 1 per cent which, for the most part, adds little to the mechanical or physical properties. It is when the copper content exceeds 0.70 per cent that real and important modifications in properties are noted and the iron is sensibly benefited in tensile and yield strength by the alloying element.

### Copper Improves Malleable Iron

The authors found that such copper-bearing malleable iron has certain advantages over ordinary malleable iron. The copper is easily soluble, either with the charge or in the ladle, and at least 3 per cent goes into solution. Under 0.50 per cent copper has little effect on the physical properties, but 0.70 to 1.25 or 1.50 per cent improves the endurance strength. The mechanical properties of iron containing more than 0.70 per cent copper are improved by precipitation hardening. Copper does not change the fluidity or shrinkage of malleable iron, nor does it increase cracking. Likewise it has no marked influence on the structure. Copper accelerates graphitization considerably, and it reduces the susceptibility to intergranular embrittlement.

It is not until the copper content goes beyond 0.5 per cent that the mechanical properties of malleable cast iron are affected. At this point the properties begin to increase and continue so until the copper reaches about 1.25 to 1.5 per cent. Beyond

this point the properties are only moderately affected. These observations are evident in Table 1, which shows data on plant-made irons.

Perhaps the most significant effect of copper is the change in yield strengths. All irons with more than 1.25 per cent copper have a yield strength of 44,000 to 46,000 lb. per sq. in., which is obtained more or less regardless of the quality of the base iron. Provided no mottled areas appear in the white iron, it remains unchanged to at least 3 per cent copper. The tensile strength of the irons with 1.25 per cent copper or more also tends to reach a constant value, about 60,000 lb. per sq. in.

The exceptional increase in tensile yield strengths brought about by copper in high-carbon iron is unique and of some industrial importance. By this simple expedient of alloying iron with 1.25 per cent copper, a low shrinkage and easily machineable material is made to possess the strength properties of the low-carbon malleable iron. Only its elongation is not improved. Copper is particularly effective in raising the yield and tensile strengths of the weaker high-carbon irons.

With regard to the precipitation hardening in copper malleable cast iron, some improvements in strength and hardness are gained merely by reheating the annealed iron for several hours at 850 to 1000 deg. F. But to harden the iron effectively by subsequent precipitation, a solution treatment to dissolve a reasonable quantity of copper should precede the reheating. This solution heat treatment, to

TABLE 3  
PHYSICAL PROPERTIES OF SOME HIGH-CHROMIUM CAST IRONS

| No.             | Chemical Analysis |      |       |       |      |       |      | Transverse Test |                | Modulus of Rupture Lb. per Sq. In. | Modulus of Elasticity Lb. per Sq. In. | Tensile                  |   |         |
|-----------------|-------------------|------|-------|-------|------|-------|------|-----------------|----------------|------------------------------------|---------------------------------------|--------------------------|---|---------|
|                 | Si                | C    | S     | P     | Mn   | Cr    | Ni   | Load Lb.        | Deflection In. |                                    |                                       | Strength Lb. per Sq. In. | Hardness Rockwell   | Brinell |
| 1. <sup>1</sup> | 0.85              | 0.93 | 0.040 | 0.057 | 0.30 | 31.40 | ...  | 3450            | 0.175          | 91,528                             | 23,949,252                            | 52,140                   | C34.8   | 302     |
|                 |                   |      |       |       |      |       |      | 3000            | 0.150          | 79,590                             | 23,949,252                            | 47,440                   | C34.4   | 293     |
| 2.              | 1.43              | 0.78 | 0.030 | 0.090 | 0.95 | 33.70 | ...  | 1880            | 0.100          | 49,876                             | 22,500,000                            | 32,500                   | B104  | 262     |
| 3. <sup>2</sup> | 1.05              | 0.72 | 0.090 | 0.090 | 0.41 | 24.84 | ...  | 4040            | 0.27           | 107,181                            | 17,900,000                            | 47,900                   | B97.5   | 228     |
|                 |                   |      |       |       |      |       |      | 2865            | 0.19           | 76,000                             | 17,900,000                            | 41,720                   | B95.5 Edge<br>B85.5 Midway—170<br>and<br>B41.0 Center—153 | 341     |
|                 |                   |      |       |       |      |       |      |                 |                |                                    |                                       |                          |   |         |
| 4. <sup>3</sup> | 1.18              | 1.57 | 0.109 | 0.107 | 0.31 | 24.70 | ...  | 4670            | 0.23           | 124,000                            | 24,200,000                            | 73,800                   | C39.5   | 363     |
|                 |                   |      |       |       |      |       |      | 3770            | 0.17           | 100,018                            | 26,500,000                            | 69,540                   | C37.2   | 321     |
| 5. <sup>4</sup> | 1.96              | 1.84 | 0.057 | 0.032 | 0.65 | 23.95 | 0.42 | 4285            | 0.19           | 113,600                            | 26,900,000                            | 85,600                   | B108.2  | 341     |

<sup>1</sup> No. 1 iron made with nitrogen-bearing ferrochrome. The two sets of values of physical properties were obtained on finer grained and coarser grained specimens respectively.

<sup>2</sup> The two sets of values of physical properties given for iron No. 3 are for finer grained and coarser grained specimens respectively.

<sup>3</sup> The two sets of values of physical properties given for iron No. 4 are for "as cast" and annealed specimens respectively. Annealed specimen of iron No. 4 annealed at 1850 deg. F. for 3 hr. and slowly cooled.

<sup>4</sup> No. 5 iron annealed at 1800 deg. F. for 3 hr. and slowly cooled.



**TABLE 4**  
Fatigue Tests on High-Test Cast Irons—Chemical Compositions of Test Specimens

| Iron                 | Chemical Content, Per Cent |                 |         |           |        |         |            |
|----------------------|----------------------------|-----------------|---------|-----------|--------|---------|------------|
|                      | Total Carbon               | Combined Carbon | Silicon | Manganese | Nickel | Sulphur | Phosphorus |
| A                    | 3.09                       | ...             | 2.01    | 0.60      | ...    | 0.08    | 0.16       |
| B & B <sup>1</sup> * | 3.07                       | ...             | 1.26    | 0.90      | ...    | 0.08    | 0.15       |
| C                    | 3.18                       | 0.83            | 1.34    | 0.89      | ...    | 0.09    | 0.11       |
| D                    | 2.91                       | ...             | 2.28    | 0.85      | 0.88   | 0.10    | ...        |

\*All irons except B<sup>1</sup> were tested "as cast." Iron B was tested "as cast," but Iron B<sup>1</sup> was pre-heated slowly to 1000 deg. F., then heated quickly to 1600 deg. F., then quenched in oil and drawn at 1000 deg. F.

**Data of Repeated Stress Tests**

| Iron | Type of Stress | Range of Stress   | Maximum Computed                  | Number                 |
|------|----------------|---|-----------------------------------|------------------------|
|      |                |   | Stress in Cycles, Lb. per Sq. In. | of Cycles for Fracture |
| A    | Flexure        | Zero to maximum   | 26,000                            | 184,000                |
|      |                |   | 25,000                            | 466,000                |
|      |                |   | 24,000                            | 958,000                |
|      |                |   | 23,000                            | 10,000,000*            |
| A    | Flexure        | Endurance Limit: 23,000 lb. per sq. in. Complete reversal | 25,000                            | 69,600                 |
|      |                |   | 22,000                            | 1,512,000              |
|      |                |   | 21,000                            | 298,000                |
|      |                |   | 20,000                            | 253,500                |
| A    | Torsion        | Zero to maximum   | 19,000                            | 10,000,000*            |
|      |                |   | 18,000                            | 10,000,000*            |
|      |                |   | 27,000                            | 165,000                |
|      |                |   | 26,000                            | 10,000,000*            |
| A    | Torsion        | Endurance Limit: 23,000 lb. per sq. in. Complete reversal | 25,000                            | 116,100                |
|      |                |   | 24,000                            | 853,000                |
|      |                |   | 23,000                            | 10,000,000*            |
|      |                |   | 19,000                            | 47,300                 |
| B    | Flexure        | Zero to maximum   | 18,000                            | 133,500                |
|      |                |   | 17,000                            | 500,000                |
|      |                |   | 16,000                            | 10,000,000*            |
|      |                |   | 34,000                            | 235,000                |
| B    | Flexure        | Endurance Limit: 32,000 lb. per sq. in. Complete reversal | 33,000                            | 240,000                |
|      |                |   | 32,000                            | 10,000,000*            |
|      |                |   | 30,000                            | 10,000,000*            |
|      |                |   | 28,000                            | 1,200,000              |
| B    | Torsion        | Zero to maximum   | 27,000                            | 10,000,000*            |
|      |                |   | 26,000                            | 210,000                |
|      |                |   | 25,000                            | 10,000,000*            |
|      |                |   | 24,000                            | 202,500                |
| B    | Torsion        | Endurance Limit: 25,000 lb. per sq. in. Complete reversal | 23,000                            | 300,300                |
|      |                |   | 22,000                            | 10,000,000*            |
|      |                |   | 34,000                            | 20,000                 |
|      |                |   | 30,000                            | 205,000                |
| C    | Flexure        | Zero to maximum   | 29,000                            | 335,000                |
|      |                |   | 28,000                            | 1,800,000              |
|      |                |   | 27,000                            | 10,000,000*            |
|      |                |   | 27,000                            | 240,000                |
| C    | Flexure        | Endurance Limit: 27,000 lb. per sq. in. Complete reversal | 24,000                            | 93,000                 |
|      |                |   | 23,000                            | 10,000,000*            |
|      |                |   | 22,000                            | 10,000,000*            |
|      |                |   | 34,000                            | 51,000                 |
| C    | Torsion        | Zero to maximum   | 32,000                            | 80,000                 |
|      |                |   | 29,000                            | 310,000                |
|      |                |   | 28,000                            | 215,000                |
|      |                |   | 27,000                            | 180,000                |
| C    | Torsion        | Endurance Limit: 26,000 lb. per sq. in. Complete reversal | 26,000                            | 10,000,000*            |
|      |                |   | 23,000                            | 64,000                 |
|      |                |   | 22,000                            | 155,000                |
|      |                |   | 21,000                            | 10,000,000*            |
| D    | Flexure        | Zero to maximum   | 40,000                            | 77,900                 |
|      |                |   | 36,400                            | 91,000                 |
|      |                |   | 34,000                            | 82,000                 |
|      |                |   | 33,000                            | 10,000,000*            |
| D    | Flexure        | Endurance Limit: 33,000 lb. per sq. in. Complete reversal | 47,000                            | 1,500                  |
|      |                |   | 35,000                            | 16,100                 |
|      |                |   | 25,200                            | 160,500                |
|      |                |   | 24,500                            | 427,900                |
| D    | Torsion        | Zero to maximum   | 22,000                            | 10,000,000*            |
|      |                |   | 36,000                            | 171,000                |
|      |                |   | 34,000                            | 955,000                |
|      |                |   | 33,000                            | 10,000,000*            |
| D    | Torsion        | Endurance Limit: 33,000 lb. per sq. in. Complete reversal | 30,000                            | 11,200                 |
|      |                |   | 24,000                            | 12,400                 |
|      |                |   | 21,000                            | 107,000                |
|      |                |   | 20,500                            | 140,500                |
| D    | Torsion        | Endurance Limit: 20,000 lb. per sq. in.                   | 20,000                            | 10,000,000*            |
|      |                |   | 20,000                            | 10,000,000*            |

\*Did not fracture.

dissolve some of the copper precipitated during the slow cooling following the anneal, should be carried out at a temperature just below the lower critical. This avoids carbon absorption, yet permits a substantial solution of copper. Copper is retained in solution even at reasonably slow rates of cooling, as, for instance, during air-cooling.

By reheating the solution-treated irons to 850 to 1000 deg. F., for a time determined by the temperature and the degree of hardening sought, copper (according to the usual explanation of precipitation-hardening phenomena) is precipitated as particles of sub-microscopic size. These disseminated particles produce hardening of the irons and increase their tensile and yield strengths. A few data are included in Table 2 to demonstrate the precipitation-hardening effect in specimens of iron that were given a solution treatment for one hour at 1350 to 1375 deg. F., then reheated for three hours at 930 deg. F.

The average tensile and yield strengths and hardness of the malleable cast irons are slightly increased, and the elongation practically unaffected by the solution treatment, indicating that a rather small amount of carbon is redissolved and that part of the copper has been brought into solution at the temperature chosen. Some precipitation hardening occurs on reheating for three hours at 930 deg. F. Malleable irons containing 0.6 per cent copper or less show no alteration in properties, but those containing one per cent copper or more have their tensile and yield strengths increased by 2000 to 10,000 lb. per sq. in. with only a small noticeable reduction in elongation.

#### High-Chromium Cast Irons

Another paper of note was devoted to the experiences of G. P. Phillips, of the Frank Foundries Corp., with high-chromium cast irons. These irons contained approximately 20 to 35 per cent chromium, and they were roughly divided into two series, one containing about one per cent carbon or less and the other more than one per cent.

This type of iron may be used regularly at temperatures up to 1800 deg. F. and for short periods up to 1900 deg. F. They have good resistance to atmospheric corrosion, and to nitric, sulphuric, and mixtures of nitric and sulphuric acids. They are fairly reliable for dilute phosphoric and lactic acids, for numerous salt solutions and for caustic soda solutions. In contact with molten lead and aluminum they have given excellent service with practically no warp-

age. In general, the lower carbon grades are the more corrosion resistant. Therefore, these irons can be used for annealing pots, conveyor links, melting pots, nozzles, etc.

These high-chromium irons were produced by the author in an indirect-arc-type electric furnace. The electric furnace is used in order to secure control of the carbon content and to obtain the high temperatures necessary for refining and casting the low-carbon grades. It is possible to produce these irons in a cupola but the resulting metals have high carbon contents, large carbide grains and are relatively weak and brittle. These irons, however, are suitable for some services and their poor machining properties are improved by annealing at high temperatures.

Lump ferrochrome of the high-carbon type, containing approximately 5 per cent carbon, may be used to produce the higher carbon grades of chrome-iron. Low-carbon ferrochrome is used to produce the lower carbon types. The furnace charge is melted down and superheated to 2950 to 3050 deg. F., depending on the composition of the metal and type of castings to be poured. The chromium content of the charge must be 8 to 10 per cent over the desired amount to allow for oxidation losses during melting and superheating. The large amount of slag formed is removed before pouring.

The author has made castings of this metal weighing from 1 lb. to 800 lb. An allowance of about  $\frac{1}{4}$  in. per foot for shrinkage in the making of patterns is necessary.

Typical chemical analyses and physical properties of these types of irons are shown in Table 3.

High-chromium irons containing less than about 30 per cent chromium may be softened by annealing and may be hardened by quenching in oil or air from 1900 deg. F. or higher. Irons of over 30 per cent chromium are practically unaffected by heat treatment. Irons which respond to heat treatment may be hardened to a Brinell in excess of 600, and such irons may be used for abrasion resistance in combination with corrosion resistance.

Castings made from high-chromium irons should be as uniform as possible in metal section. Very heavy sections should not be used. It might be pointed out that failures have occurred in parts made with high-chromium irons that have been subjected to stresses due to localized heating and to sudden thermal shock.

Data on the fatigue strength of

high-test cast irons are rather limited, and the paper by H. F. Moore and J. J. Picco, University of Illinois, was timely as it was devoted to this subject.

The authors tested four different irons, one of them in both the "as cast" and the heat-treated condition. The tests included static tension, static compression, fatigue tests both for flexure varying from zero to a maximum stress in one direction and for cycles of completely reversed torsion, and fatigue tests in torsion varying from zero to a maximum stress in one direction.

The chemical analyses of the irons tested are shown in Table 4. In the same table are shown the data of the fatigue tests. The endurance limits can be determined directly from the table. A fatigue specimen was considered to have reached the endurance limit when it had withstood 10,000,000 cycles of stress, evidently above the endurance limit for the other specimens.

#### Melting Non-Ferrous Alloys in the Cupola

WHILE the above sessions on cast irons and porosity were being held, other members at the convention were attending the non-ferrous divisions. One paper in this section was devoted to the melting of non-ferrous alloys in the cupola-type furnace. The author was W. C. Alvin, superintendent of the Imperial Brass Mfg. Co. The author's furnace, which was used for this purpose, is much the same as that in general use in iron foundries, except for a few changes to adapt it to non-ferrous melting. The fuel used is a by-product pitch coke, called a fixed carbon fuel. A metal-fuel ratio of 12 to 1 is usually maintained, and the metal and fuel are charged alternately. The metal can be tapped  $1\frac{1}{4}$  hr. after starting the fire, and, after that, tapping is continuous. Necessary replacements of lead and zinc are made to the ladle after tapping. One addition to the usual cupola equipment is a smoke arrester which is practically necessary because of the heavy zinc oxide fumes.

The author gave as some of the advantages of cupola melting (1) the convenience of continuous pouring, (2) the flexibility of the furnace, which can be operated entirely to suit production requirements, and (3) the low melting cost.

Under ordinary conditions an 11 or 12-to-1 ratio of metal-fuel is maintained, and a 14-to-1 ratio is not uncommon. Since the installation of

the author's cupola, the cost of fuel has ranged from \$2.54 to \$2.77 per ton of metal melted. This figure does not take into account other costs, such as labor, repairs, firebrick and kindred items. As an average over a number of years, the cupola melting cost figures 32 to 35.5 per cent of the gas melting cost.

The cupola will not melt every type of copper alloy successfully and economically. The controllable factor is the zinc loss; therefore, the metal melted should not contain a large amount of zinc. The most practical alloy is a red-brass mixture containing not less than 78 per cent copper, with the zinc content kept under 5 and the lead under 10 per cent.

The metal losses are high as compared to other methods of melting. In an electric furnace the metal loss is practically nothing. In a coal-fired crucible the losses are very low, about 2 per cent lead and 12 zinc. Losses are slightly higher with a gas-fired crucible, but in cupola melting the lead loss is 15 per cent and the zinc loss 45 per cent. Losses of copper and tin are negligible.

The degree of mixing may be varied according to the kind of metal charged. The author used nothing but regular ingots, gates and sprues and shop scrap. The use of borings is not recommended because the blast has a tendency to blow the borings through the stack. It is advisable to make the necessary replacement of zinc and lead to the ladle when tapping as no oxidation of any consequence takes place at that point.

The melting zone of the furnace is insulated with a layer of sil-o-cel and firebrick and a rammed lining of a special refractory material known as Carbofrax No. 3. The remainder of the stack is lined with firebrick. Experience has shown that the block type of lining is impractical, and it is not economical when compared to the rammed type. One-half to three-fourths of an ounce blast pressure, 350 to 375 cu. ft. per min., is required for melting operations. The temperature above the tuyeres is approximately 3100 deg. F., the pouring temperature into the crucible is between 2200 and 2400, and the stack temperature is 1800 to 1900 deg. F.

#### Low Temperature Recommended for Pouring Yellow Brass

On the subject of deoxidation and degasification of yellow brass, a comprehensive manuscript was presented by L. A. Ward, metallurgist for the Chase Brass & Copper Co. In discussing deoxidation, the author re-

(Concluded on Page 80)



# A Rift in the Clouds

**S**INCE the President's return from his western trip numerous outstanding incidents have occurred which indicate a change in the trend of Administration policies as affecting the whole program of recovery.

The first incident of note was the President's own statement in his radio talk to the nation on Sept. 30 last: "We count, in the future as in the past, on the driving power of individual initiative and the incentive of fair profit, strengthened with the acceptance of those obligations to the public interest which rest upon us all. We have the right to expect that this driving power will be given patriotically and whole-heartedly to our nation."

As there has been so little said of "individual initiative" and a "fair profit" during the past 18 months of struggle for recovery, this statement, together with the President's outstanding proposal of "a trial period of Industrial Peace," was very encouraging, as it indicated a desire to break away from an era of "trial and experiment" and to return to sound and tried methods of procedure.

## Richberg Reassures Business

The second incident of note was the clarifying statement of the chief of the Administration's new anti-depression general staff, Donald Richberg, that: "Business is now assured that no sudden uncoordinated shifts and no sweeping changes in NRA will be made in new deal emergency policies, and that deliberate consideration will be given all policies after all interested had received a hearing."

The third incident was the assurance that the whole question of future legislation regarding NRA, which expires June 16, 1935, under existing law, is to be worked out in the light of past and future experience. That the two board organization recently set up should be considered simply as a trial set-up.

The fourth item of encouragement was embodied in Chairman Richberg's interpretation of the National Labor Board's ruling, in the case of the

---

By **GEORGE M. VERITY**

---

Houde Engineering Co. of Buffalo, in which he said: "That decision and the interpretation given to Section 7a of the Recovery Act did not differ from that given by General Johnson and myself a year ago; that the Houde decision was perfectly clear in that an individual had the right to represent himself or to have a committee represent him in any grievance."

This statement was contrary to the impression that the decision meant that a *minority* must accept the representation provided by a *majority* vote of employees.

## Madam Perkins, Too

The fifth incident was the very modified and conciliatory statement of Secretary of Labor Frances Perkins, before the annual convention of the A. F. of L. in San Francisco on Oct. 5, when it is well known that the Department of Labor has been supporting, in principle, at least, a majority of the strikes that occurred throughout the summer.

Miss Perkins counselled mediation and arbitration and the recognition of the machinery set up by the Government for the settlement of labor difficulties.

Miss Perkins said in part: "The government has established boards to make judicial findings of fact and to arbitrate if both parties to a dispute agree, and to maintain continuously a machinery for effective industrial relations in cases where the principal parties cannot quickly and peacefully agree. It seems fitting, proper and reasonable that this system should be given a fair trial."

## Acceptance of "Merit Clause"

The sixth incident of marked importance was the decision reported on Oct. 8 of the National Labor Relations Board to the effect that the

merit clause contained in some industrial codes was not in conflict with the letter or spirit of the Recovery Act, that it did not interfere with collective bargaining and did not discriminate against union men.

The automobile code was the first to contain a so-called merit clause. It read approximately as follows: "Nothing in this code shall prevent the selection, retention or advancement of any employee on the basis of his individual merit without regard to his affiliation with any labor or employee organization."

The National Aniline & Chemical Industry's code carried the following provision: "It is recognized that the chemical industry if it is to keep abreast of chemical progress in the world, requires employees capable of constant advancement in their technical skill and of high and loyal character. Therefore, conscious of the great purpose of the industry, by presenting this code, the employers in this industry shall not be deemed to have waived any of their constitutional and legal rights to engage, promote or release employees."

## President Is Consulting Business

It is very generally understood that for some time past the President has had some of his ablest associates, men of experience, visiting various parts of the country and meeting with groups of representative business men in an effort to secure, first-hand, their opinion of current conditions and as to how various Administration policies were working.

All of these findings and actions do point to a more sound and liberal recognition of the basic rights and needs of finance and industry, as organized under our established form of government. They are therefore very encouraging and helpful.

The President will find business men everywhere willing and anxious to cooperate, as always, in any movement that will, in the joint judgment of Government and business, bring a return of normal business activity and employment.

dus-  
with  
very  
with  
dis-

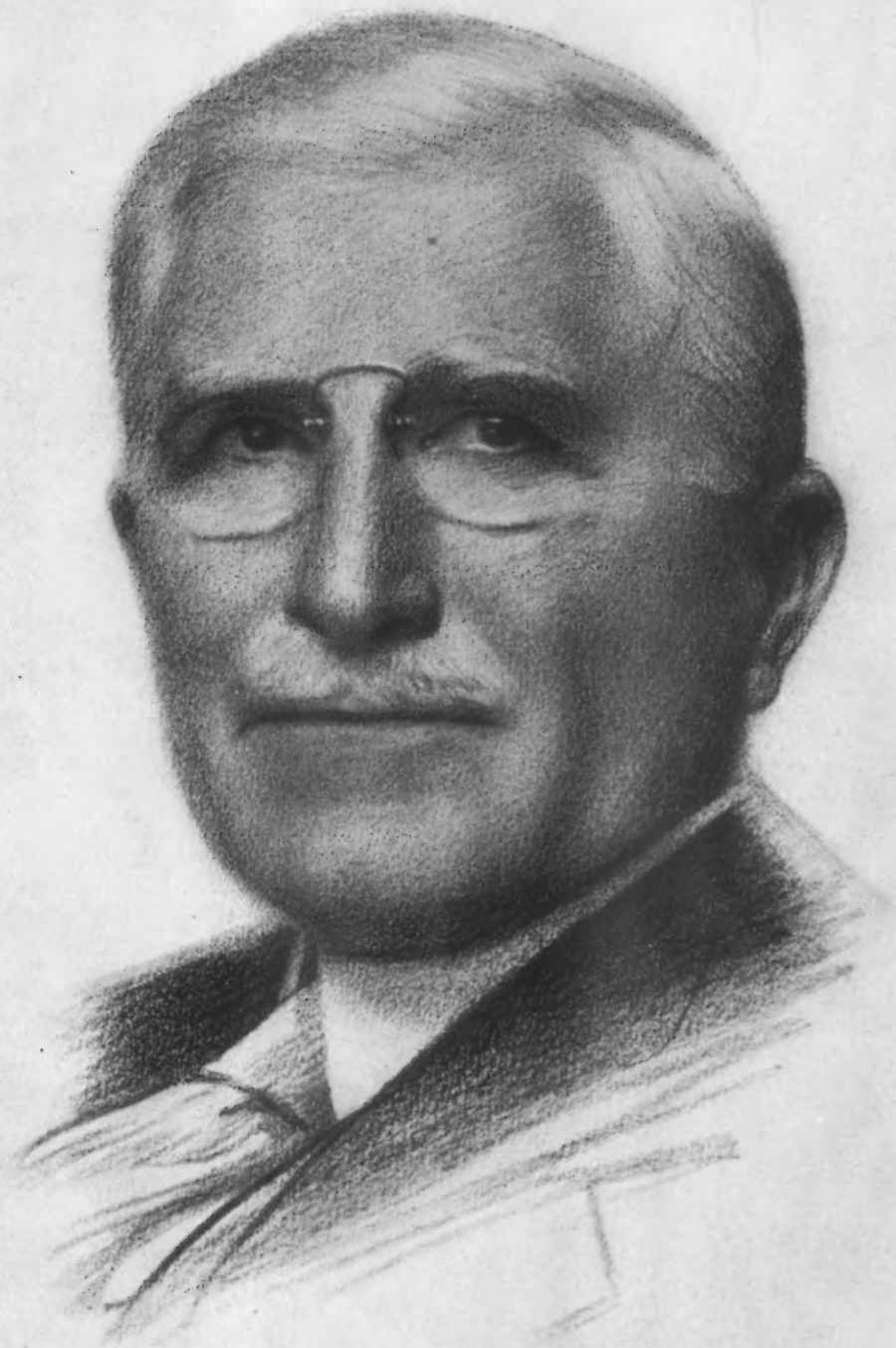
first  
use.  
ows:  
vent  
nce-  
s of  
d to  
em-

ical  
ving  
the  
keep  
the  
e of  
ech-  
nar-  
the  
by  
s in  
to  
itu-  
pro-

s  
hat  
has  
men  
rts  
ith  
men  
eir  
as  
bli-

do  
ral  
nd  
or-  
of  
ery

ess  
us  
ve-  
ent  
a  
ity



GEORGE M. VERITY, Drawn by John Frew for The Iron Age



th  
A  
ti  
B  
Sp  
le  
th  
qu  
an  
ti  
ti  
to  
m  
si  
w  
tu

B  
pr  
sp  
m  
ed  
of  
ti  
in  
pu  
be  
tia  
A  
pe

ha  
th  
ma  
as  
st  
th  
tu  
pr  
M  
th  
in  
fir  
go  
wo

th  
wa  
ta  
pr  
its  
ex  
re  
de  
th  
un  
fal  
pa  
th

# Fabricators Condemn Fabricating-in-Transit Regulation, Oppose Quantity Extras

**I**NTIMATE study of the steel construction industry's problems occupied two full and active days at the twelfth annual convention of the American Institute of Steel Construction which was held at the Edgewater Beach Hotel, Chicago, Oct. 25 and 26. Special attention was given to problems pertaining to the small shop and the structural steel code. The proposed quantity extras on structural shapes and plates were opposed and a resolution was adopted condemning Regulations No. 9 of the steel code relating to fabrication in transit. Competitive materials came in for active discussion and many pertinent suggestions were made as to how the use of structural steel can be promoted.

Clyde G. Conley of the Mount Vernon Bridge Co., Mount Vernon, Ohio, and president of the association, called special attention to three achievements of the past year: first, the editing and printing of a new manual of steel construction; second, promotion of plans to eliminate grade crossings and the scheduling of worth-while public works; third, the fight for the best interests of the industry in negotiations with the National Recovery Administration for a code of fair competition.

He pointed out that the institute has a tremendous faith in the reforms the mills are endeavoring to effect in marketing of plain materials. He asked for cooperation between the institute and the steel mills and stated that mills have not had a full opportunity to inquire into the peculiar problems of the construction industry. Mr. Conley was able to report that for the first time since the creation of the institute the mills are offering the first practical means to extend the good offices of the institute and to work for a much richer opportunity.

An excellent survey of the work of the institute, past, present and future, was given by V. G. Iden, acting secretary, who said that there are kinds of promotion which the public, through its ignorance of technical differences, expect of the institute because of the reputation it has established. In the development of steel-frame residences there is no immediate hope for volume of business to the structural steel fabricator for the reason that a large part of this class of work involves the structural use of sheets and thin

---

## Officers and Directors Reelected

**E**IGHT directors of the institute were reelected for three years and the present officers were re-named. The directors reelected follow: R. I. Ingalls, Ingalls Iron Works Co., Birmingham, Ala.; R. C. Mahon, R. C. Mahon Co., Detroit; W. W. Wood, Mississippi Valley Structural Steel Co.; Jose A. Moore, Moore Drydock Co., San Francisco; Clyde G. Conley, Mount Vernon Bridge Co., Mount Vernon, Ohio; Art J. Dyer, Nashville Bridge Co., Nashville, Tenn.; Clyde MacCornack, Phoenix Bridge Co., Phoenixville, Pa., and Edward K. Klingelhofer, Pittsburgh Bridge & Iron Works, Rochester, Pa.

---

plate, and in the second place the work would probably not go through a fabricating shop. The lay public, however, respects the institute's advice and looks to it in an increasing measure for information on all permanent structures in which steel is used. Mr. Iden urged that this confidence so placed should not be abused or neglected but should be carefully fostered so that the reputation of steel as a material of construction will continue to increase.

### The Problem of the Small Shop

Small shops for the fabrication of steel work have a right to exist and they are, and ought to be, creators of business, according to W. B. Truitt, vice-president, Carolina Steel & Iron Co., Greensboro, N. C. At the same time, he passed out a word of caution with regard to the establishment or the too ambitious growth of many small enterprises. The fact is we face new conditions and have not found a way to meet them. This is reflected in the lack of confidence, the want of faith and the halting which characterize business. The owner or executive of a small shop should know his limitations and curb his ambition to

reasonable bounds and should give special attention to credits and collections. Possibly more small businesses failed for lack of experience and judgment in applying overhead expense than for any other reason. The manager of a small concern should not think that he can get away with an overhead expense of less than 100 per cent based on actual shop labor and in all probability the percentage would likely be nearer 200 per cent, and, unless confidence is restored to private building, the percentage may easily rise to 300 per cent. It must not be overlooked that taxes, which are now burdensome, will increase and American business, if it exists, will have to pay. As the usual thing the smaller shop should, if possible, secure work with a relatively large amount of labor and a relatively small amount of material. Applying overhead on labor alone penalizes on the very kind of work it ought to have.

Diversification is not the easy way, but it may, and probably will in some instances, be the salvation of many a small concern. However, unless the management has imagination and common sense; unless there is reasonable technical ability; unless the organization has at least one really practical and experienced man; and if hard work is disliked, diversification is to be shunned or undertaken carefully and by degrees. Arguments for diversification are: private building will be retarded for some time to come; diversification discourages staleness and it gives employment.

Selling by the more limited member of the industry is sometimes more difficult than for the larger shops. Prejudice, and fear on the part of the customer, must be overcome. Competition has to be faced, but not met. On the other hand, if the smaller concern is always high with a customer, he will soon be omitted from the list of bidders. At the expense of competition, the smaller shop ought to stick to its own back yard and only bid on jobs within its limitations. It should look for jobs in which large capacity concerns are not interested and it should create business for itself.

### Need for Sales Promotion

There is a widespread impression that steel structures lack permanence and durability, according to G. G. Greulich, sales engineer, Carnegie



Steel Co., Pittsburgh. Also, very little consideration has been given to the use of steel in many structures, especially in the smaller or outlying communities, principally because there has been very little effort to secure specifications requiring the use of steel. In most cases the answer to these conditions is that effective sales promotional work can be done by the fabricator's normal personnel without conflicting with other duties and without an increase in expenditures.

Promotion of structural steel by the fabricator can be accomplished by discussion of the matter with associates and employees. Encourage them to talk steel and its uses and get to know and keep in touch with all persons who may have influence in the selection of materials, including various public officials. If there are universities or colleges near the shop, the fabricator should get acquainted with the faculty members who teach engineering.

There is hardly a community in the country where one cannot find steel structures that have rendered useful service for from 30 to 40 years without having suffered serious deterioration despite neglect and lack of adequate maintenance. Nearly all of these structures are still capable of rendering service for an extended period of years. The eyes of the public can be focused on these steel structures and there should be a constant drive to keep the public fully informed of the many advantages of this type of construction.

While numerous steel bridges have been replaced during the past 10 years, their replacement has been on account of obsolescence and not due to the inability of the structures to carry loads for which they were originally designed. During the last several years a number of the western states have had occasion to replace a large number of obsolete bridges, which had rendered satisfactory service for 30 or more years. Usually these bridges were supported by steel beam bearing piles driven in small clusters at the four corners of the truss spans. Even though the supporting beams or piles have been subjected to alternate wetting and drying, and in many cases had no application of paint other than that originally applied at the time of the construction of the bridge, the net section of the piles was reduced so little that many of them were still within the original mill tolerances in the dimensions of their component parts.

In some cases old piling has been pulled and reversed so that it had 100 per cent salvage value.

While many fabricators have undoubtedly found a number of new outlets for miscellaneous lots of steel, it would appear that the present time is most opportune for laying the ground work for participation in the benefits of a resumption of activity in residence construction. There is a splendid

opportunity to utilize many odds and ends of good quality angles, small channels, and other sections which may have accumulated around the plant. Much of this kind of material can go into residence construction and in this manner it is eliminated from the inventory and the often experienced practice of permitting it to deteriorate into scrap.

On the subject of competitive materials, John A. Crook, president of the Denver Steel & Iron Works Co., Denver, Colo., said that he had recently had occasion to dig around some steel

### Regulations No. 9 Opposed

**T**HE following resolution relating to a recent regulation of the steel mills covering fabrication in transit was adopted by the American Institute of Steel Construction:

"We recommend that the officers of A.I.S.C. be authorized to oppose enforcement of Regulations No. 9 of the American Iron and Steel Institute. We further recommend that the officers negotiate with the code authority of American Iron and Steel Institute concerning any regulations now in effect or hereafter proposed by that body which may in any way affect the fabricating industry."

piling which he had driven in Oklahoma 28 years ago and that he found that the shop coat of paint was still intact for a distance of 6 in. below the ground line. Steel piling driven 19 years ago in Wyoming is just now beginning to show signs of the original coat of paint peeling where the ground and air meet. Steel piling driven in salt water off the coast of Florida has shown about 3 per cent deterioration from oxidation at the end of 20 years.

### Separation of Structural from General Contracts

The committee on separation of structural steel contracts from general contracts has reached the conclusion that, owing to the varying conditions in different sections of the country, it would be inadvisable and impracticable to establish by law a situation to bring about a separation of the furnishing and erecting of structural steel from the general contract. The committee believes that the remedy for this situation lies within the industry itself and the evils could be very largely corrected by a proper form of proposal and contract provided the members of the institute would agree to demand such a contract.

The committee on penal bond legislation pointed out that the principal

objection from the viewpoint of fabricators to the present law is that while steel is being erected at a reasonably early stage of the work of construction, fabricators do not have the right to sue on the bond until six months after completion of the building and final settlement between the United States and the contractor. Even when the contractor does not default in the work of construction, it is frequently more than a year after the steel is furnished before the fabricator has the right to sue on the bond. A further objection is that it is necessary for all persons to intervene in the suit first brought, for if that suit first brought be premature or otherwise defective, the rights of the fabricator may be prejudiced.

### Object to New Quantity Extras

In regard to quantity extras on shapes and plates ordered in small lots, it was stated by the institute committee that the structural steel fabricator is now required to pay an extra on the plain material he purchases from the rolling mill when a section of a special size is required, or when a section of special quality is demanded. In addition to all of these extra charges, the rolling mills are now proposing to impose on top of all of them an extra charge of from 10c. to \$1 per 100 lb. when orders in small quantities are placed, and 5c. per 100 lb. for special mill marking.

### Fabricators Take 80 Per Cent of Structural Steel Made

According to reports issued by the American Iron and Steel Institute, the rolling mills produced a total of 33,941,500 gross tons of structural shapes during the ten years 1920 to 1929, inclusive. During this same period the fabricating shops of the United States fabricated and shipped 26,480,500 tons of fabricated structural steel, which represents approximately 80 per cent of all of the structural shapes rolled by the mills during that ten year period.

The figures clearly show that the market for structural shapes is dependent primarily upon the close cooperation of the steel fabricator, and the volume of this market is dependent upon the ability of the steel fabricator to obtain his material upon a scale which will allow him to continue in business upon an equitable basis. Inasmuch as the steel fabricator has thus dominated this market in the past, it is clear that the market cannot be extended if the interests of the fabricator are jeopardized.

Inasmuch as the fabricator of structural steel must sell his product and his services for buildings and bridges in a market where competitive methods and competitive materials play an important part, this competition between types of construction has been a potent agency in keeping down the price of structural steel and reducing

the margin of profit on the business of fabrication and erection. This relative position between steel and other materials would be violently disrupted if the cost of the plain material is to be substantially increased and if the cost of the fabricating is to be increased.

The fabricating shop manufactures to order and it is not its practice to carry a large stock of material. It has always been the practice of these shops to place orders with the mills for material against actual contracts in hand. To impose quantity extras would merely encourage the shops to carry a larger stock of shapes which would involve a greater investment in materials, thereby increasing the overhead of the fabricator.

#### Would Stifle Business of Small Shops

There are several hundred small fabricators and small shops throughout the country that are carload and less-than-carload buyers. They are forced to mix their requirements when ordering from the mills. These small shops take care of the trade that the large fabricating shops would never locate and these small shops are daily promoting and advocating the further use of steel for sundry purposes, thereby accomplishing a form of advertising which the rolling mills themselves could never accomplish, and their value to the steel industry is such that the mills should do everything in their power to keep them in business and not to penalize them.

#### Four Hundred Shops Handle Less Than 6000 Tons a Year Each

There are some 450 fabricating shops in the United States, of which only 17 have large volume of business. Approximately 400 of these shops annually have less than 6000 tons of business each. These are what might be designated as "community shops" designed to serve the community in which they are located. In the aggregate, they purchase the bulk of the shapes and plates, but because of the smallness of their organizations and their limited financial abilities, they cannot afford to purchase in quantities large enough to absorb the extras proposed, and as a result they will naturally be forced out of business and their services taken over by the larger companies who will thus dominate the trade.

In some localities a company may be found that will do fabricating work as well as serve as a jobber or warehouse of steel for that particular community. Many of these report that, while they are appreciative of the evils which have existed for several years past in warehousing, and which, no doubt, the quantity extras proposed were designed to eliminate, they still feel that the imposition of these extras would be distinctly unfair to the small fabricating company and therefore not justifiable by the facts.

From the point of view of the warehouse it makes little difference, because stock items are always purchased in quantities that do not carry an extra, but if a warehouseman intends to use the material from his warehouse stock for the fabrication of an order, and the code of fair competition as amended by the National Recovery Administrator prevails, then the warehouseman would be penalized and would find it just as difficult to estimate the charge which he must impose for material purchased of him.

If the warehouseman is allowed to fabricate from his stocks and not charge the quantity extra to the purchaser of the finished product, he would have an undue advantage over the small fabricating shop which is required by circumstances to purchase its supplies from the mill to meet specific jobs, and on which quantity extras would be applicable.

#### Possible Discrimination in Favor of Warehouse Fabricator

If the warehouse fabricator is to be compelled to include quantity extras on plates and shapes on any job that he fabricates using material from his own stock, then it would result in a situation where the warehouse fabricator would be guaranteed, under the code of fair competition, a much larger profit on his business than would be possible to the smaller fabricator who is compelled to order his plain material from the mills. This would give a discriminatory advantage to the warehouse fabricator.

On the other hand, if the warehouse fabricator is not required to include the quantity extra in his final price on fabricated material which he fabricates from his own stock, then the independent fabricator who orders his plain material from the mills would be unable to compete, and would therefore be driven out of business.

It has been claimed that the object of the proposed quantity extras was to divert the small order from the mill to some other source, such as the warehouse or the fabricator, and to discourage the one-time buyer from purchasing direct from the mill. Already the railroads impose an extra freight charge on less-than-carload lots and this differential in freight should be ample to divert any such small order business. This freight differential is sufficiently ample to compensate the warehouse for stocking structural shapes, and any additional differential would give the warehouse or jobber an undue advantage over the small fabricator.

Should these proposed quantity extras be persisted in, and should it result therefrom that the warehouses are benefited as they confess they hope to benefit therefrom, it will result in encouraging the fabricating shops to stock up and to enter the warehouse business in their localities. That would encourage even stiffer

competition among warehouses than exists at present and might still further disrupt the business of retailing structural shapes and plates.

#### Grade Crossing Elimination Program Urged in Resolution

A resolution, directed to the President of the United States, was presented and adopted in which it was clearly stated that the industry offers its aid at a time when it is apparent to all that expenditures of public funds alone cannot bring prosperity to the capital goods industry. It is urged that every step possible be taken to encourage private capital in order to supplement Government expenditures as the only means to revive the demand for capital goods. The concrete suggestion put forth was that the Government immediately start an extensive program for the elimination of grade crossings. It is estimated that such a program would cost \$1,400,000,000 and that it would furnish one year of employment to each of 750,000 men directly and to a large number of men indirectly.

## Contracts Awarded for New Cold Mill

CONTRACTS have been awarded for erecting the Youngstown Sheet & Tube Co.'s new cold rolling mill at Campbell, Ohio. The mill contract was awarded to the Mesta Machine Co., of Pittsburgh, and the steel will be erected by the Fort Pitt Bridge Co., of Pittsburgh.

The new cold rolling mill, with a capacity of from 200,000 to 250,000 tons a year, will absorb a part of the production of the new continuous strip mill, now being erected by the company at Campbell, which will have an annual capacity of from 500,000 to 600,000 tons of hot-rolled strip. The cold mill will finish strip into sheets for automobile and other purposes.

A separate building, covering 216,000 sq. ft., will house the cold rolling mill equipment. The latter will include one 3-stand tandem 4-high finishing unit, and two single-stand 4-high mills, along with continuous annealing, pickling, shearing, and straightening machinery.

The cold mills will be capable of rolling down the unfinished hot strip to 26 gage in thickness and 84 in. in width.

The cold rolling mill is expected to be ready for operation by April 1. The continuous mill will probably be completed by Feb. 1.

Commanding Officer, Springfield Armory, Springfield, Mass., asks bids until Nov. 5 for 25,000 lb. corrosion-resistant steel, and 2023 lb. centerless ground steel (Circular 29).



# Monetary Stabilization and Balanced Budget Essential to Revive Steel Trade \*

By FRANK PURNELL

President, Youngstown Sheet & Tube Co.

**N**OBODY knows definitely what is in store for American industry this winter. The country stands in the middle of a half-political, half-economic experiment such as the world has never seen before. We are surrounded by a vast confusion of plans, theories, bureaus, boards, reform measures, recovery measures, and relief measures.

Guiding a business through this sort of thing is like steering a ship through an uncharted sea. What lies beyond the horizon is unpredictable. We can and must, however, look to the immediate future—plan and decide as best we may.

Let us attempt to make a frank estimate of what is ahead of the steel industry this winter.

While we hope and expect that operations will be somewhat higher than the present rate, the outstanding fact is that we cannot expect a large increase in the consumption of steel until the country as a whole once more undertakes substantial construction and plant rehabilitation projects—pipe lines, roads and bridges, homes and office buildings, power houses, locomotives, large plant repair and improvement programs, and the like.

These things will not be undertaken until it is possible to finance them on a long-term basis, through the sale of bonds or stock.

Investors will not buy new securities of this sort until they have some assurance of monetary stability. No one wants to put a dollar into a long-term proposition until he has some idea as to what his dollar may be expected to be worth at the end of the period involved.

Are we going to have more inflation—which would make our dollar worth still less—or is the dollar going to be stabilized?

Thus far the Administration has made no definite pronouncement on this question. The national budget is not balanced and this still further contributes to hesitation on the part of would-be investors.

Without monetary stability, therefore, we cannot expect many new bond or stock issues; without such is-

ues we cannot expect the undertaking of big new projects involving the use of steel. The industry, then, must rely largely upon the demand arising only from consumption industries such as automobiles and containers, and upon the need for repairs and replacements until this situation is changed.

The Administration urged industry, including the steel industry, to raise wages. In this recovery movement the steel industry gladly cooperated to the limit, hoping that as time went on it would succeed in obtaining a volume of business sufficient to enable

## Japan Will Import Large Steel Tonnage

Permission has been requested by the Japan Iron Mfg. Co. to import approximately 100,000 metric tons of steel products for the dual purpose of alleviating the shortage caused by the suspension of steel mill operations in the Kobe and Osaka districts resulting from the disastrous typhoon of Sept. 21, and in order to prevent a further rise in domestic Japanese steel prices, according to a report to the Department of Commerce from Assistant Trade Commissioner Donald W. Smith, Tokyo.

The steel to be imported will include: 20,000 metric tons of round steel bars, 7000 tons of flat and square bars, 10,000 to 15,000 tons of medium sized angles, 8000 tons of heavy plates, 30,000 tons of black sheets, 10,000 tons of wire rods, and 10,000 tons of other unnamed steel products, the report states.

According to local reports it appears that it will be at least one month before the Sumitomo Steel Works, the Kiisha Seizo Kaisha, the Sumitomo Copper Wire & Cable Co., the Nakayama Steel Sheet Works, the Kobe Steel Works and the Kawasaki Dockyard and Black Sheet Mill will be able to resume their normal operating schedules and as a result a shortage of steel products is feared.

The previous effort of the Japan Iron Mfg. Co. to check the upward trend of prices by importing 7500 metric tons of foreign steel products

it to meet the increased costs. Such volume has not materialized as we had hoped. The industry is continuing to lose money and, as explained above, the prospects for any very substantial improvement during the coming winter are none too bright.

This state of affairs cannot go on indefinitely. Before money can be paid out, that money must be taken in.

It is generally believed that if the manufacturers of the country are to continue to absorb their present costs, the Federal Government must adopt policies which eventually will assure confidence, release credit and bring about increased volume in the heavier industries, and enable manufacturers, merchants and employers generally to earn money to meet the increased costs.

If we, as employees of the steel industry, want assurance of more business, resulting in more work and continuing satisfactory wage rates, we must lend our support to those persons and groups who are urging the Government to adopt policies of monetary stabilization and balancing of the national budget.

during August had little effect on the market and prices have continued to rise. Prior to the Osaka disaster the Japan company had decided to import an additional 10,000 tons of foreign steel materials (including large and small angles, heavy channels, I-beams, medium plates and medium weight bars) together with some 3000 tons of wire rods, domestic production of which was insufficient to cope with the growing demand. However, with the rapid rise in prices subsequent to the typhoon this original plan appears to have been merged with the current proposal, according to the assistant trade commissioner.

## Milling Machine Company Dines Old Timers

**E**Mployees in the company's service for 25 years or more were guests at an Old Timers' Dinner given by the officials of the Cincinnati Milling Machine Co. last Thursday night in the Alms Hotel. The 54 veteran employees joined in especially honoring Edward W. Sand, for 50 years in the company's service. In recognition of his work, the company presented Mr. Sand with a gold watch.

M. V. Dreyspool, 299 Madison Avenue, New York, has been appointed New York district representative for the steel beer keg division, Fedders Mfg. Co., Inc., Buffalo.

\*This article, written as a message to Youngstown Sheet & Tube Co. employees, is reprinted from the last issue of the company's *Employees Bulletin*.

## Turret Lathe Has Saddle Under-Pass For Cross-Slide Carriage

THE announcement of a new Barons & Oliver, Cleveland, No. 3 universal and No. 3 plain turret lathe, with 1½-in. bar capacity and 15½-in. swing, shown on page 42, specifies a choice of either 12 speed or eight speed (otherwise similar), all geared head with anti-friction bearings throughout, heat-treated alloy steel for all gears and multiple-splined shafts, and helical gearing for the higher speeds. All rotation is in a confined bath of oil and visible oil level gage is conveniently located. Positive force-feed oiling supplies the front and rear spindle bearings from a constant-speed pump within the head, and also through hollow shafts, reaches both of the double multiple disk clutches. Spindle anti-friction bearings are mounted in solid metal. Spindle end of flanged type is employed for the benefit of rigidity for chucks or fixtures and for the reduction of over-hang. There are neither clutches nor revolving gears on the spindle. In addition to a double multiple disk clutch for start and reverse, the head embodies a second double multiple clutch through which, it is said, an instantaneous speed reduction of about 2 to 1 can be obtained. The 12-speed head provides a speed range of from 67 to 1015 r.p.m. when using a 1200-r.p.m. motor, and from 100 to 1525 r.p.m. when using an 1800-r.p.m. motor. The eight-speed head provides a range of from 74 to 1015 r.p.m. with a 1200-r.p.m. motor, while 113 to 1525 r.p.m. is covered by an 1800-r.p.m. motor.

A standard, flanged type, ball-bearing motor is bolted directly to the end of the head and the rotor is pressed on to the first drive shaft, thus identifying the motor as a unit-part of the head assembly.

The head is cast integral with the bed, forming a nickel-semi-steel unit with thick walls and heavy ribbing. The standard ways are chilled, but if desired special hardened and ground, replaceable, solid steel bed-ways can be supplied.

The carriage has power longitudinal feed as well as power cross-feed. Six reversible power feed changes to carriage and cross-slide are obtainable independently of turret feeds; feeds are engaged or disengaged by means of knock-out levers and cam-operated cone friction clutches. A six-station indexing stop cylinder with individual stop screws for each station automatically disengages the carriage longitudinal feed; the cross-feed is automatically disengaged by adjustable trip and dog on the cross-slide. Gears are heat-treated alloy steel and slide on multiple splined shafts. The cross-feed screw is mounted on anti-friction bearings.

A large micrometer dial is equipped with observation clips and, it is said, facilitates the gaging of diameters. A square automatic indexing turret mounted on the front of the cross-slide is accurately positioned by a vertical type lock-bolt located directly beneath the cutting tool. An open side tool-post, having hardened serrated wedges for height adjustment of cutters, is attached to the rear of the cross-slide.

For facing cuts, the carriage is securely clamped to the bed by single lever; for turning-cuts by carriage tools, the cross-slide screw is locked by a binder screw. Hand-lever feed for cross-slide can be supplied for the plain machine. The apron is fully inclosed and protected against coolant entrance.

The turret slide and saddle is of new design with specifications calling for all cast parts of nickel-iron, and a patented cantilever saddle construction which allows the cross-slide carriage to pass partly underneath, giving the turret slide a long bearing in the saddle and reducing overhang.

The turret revolves on a tapered roller bearing, is automatically clamped and indexed by turret slide

movements, and has a large diameter automatic binder-ring, for assurance of uniform clamping, effective around the base of the turret. A vertical alloy steel lock-bolt, operating in hardened bushings for long life, is located directly under the front turret face. There are hardened and ground steel bearing plates on the bottom of the turret slide and on the top of the saddle. The force of turret clamping can be adjustably regulated by the operator. Tool binder bolts are draw type to prevent tool-shank marking. The saddle apron gear box supplies six power feed changes independent of the carriage, and is inclosed for flood lubrication.

Bar feed is by a three-jaw chuck revolving on a ball bearing in the sliding head; this head draws the bar through a stock-tube which is supported at each end by a heavy stand casting. The collet opening and bar feeding is by single lever.

The coolant pump, with two outlets, is located away from chip area, and is driven from the motor shaft by V-belt; a positive jaw-clutch provides easy disengagement. The auxiliary base on which the taper attachment tool holder slides bolts to the rear of the cross-slide; taper turning or boring is up to 3 in. per ft. taper by 6 in. long. The thread casing attachment, of leader and follower type, has capacity of from four to 32 threads per in.

## Inert Gas Producer Completely Portable

THE Harrison inert gas producer as shown on page 42 is built by the Roots-Connersville Blower Corp., Connersville, Ind., in seven capacities ranging from 7500 cu. ft. to 40,000 cu. ft. of inert gases per hour, measured at 60 deg. F. against a pressure of 2 lb. The equipment does not require skilled attention and is said to produce less than 1 per cent oxygen and zero per cent carbon monoxide when operating on manufactured gas, natural gas or on fuel oil.

Air and gas are delivered separately to a water-cooled combustion chamber where the gas burns, forming the inert gas, which is discharged through a cooler to reduce its temperature to a usable point.

The drive unit can be an electric motor or either a gas or gasoline engine. Various types of assembly are employed, such as portable trailers, self-propelled trucks and stationary bases, to suit particular requirements.

## Gas Cutting Equipment Assumes Machine Appearance

THE presentation of modern machine design and machine-like operation in the further development of gas cutting equipment was one of the objectives of the Linde Air Products Co., in the construction of the new Oxweld Monitor gas cutting machine, CM-8, for a showing at the recent clinic demonstration which was reported by THE IRON AGE Oct. 11. The equipment is pictured on page 42 of this issue.

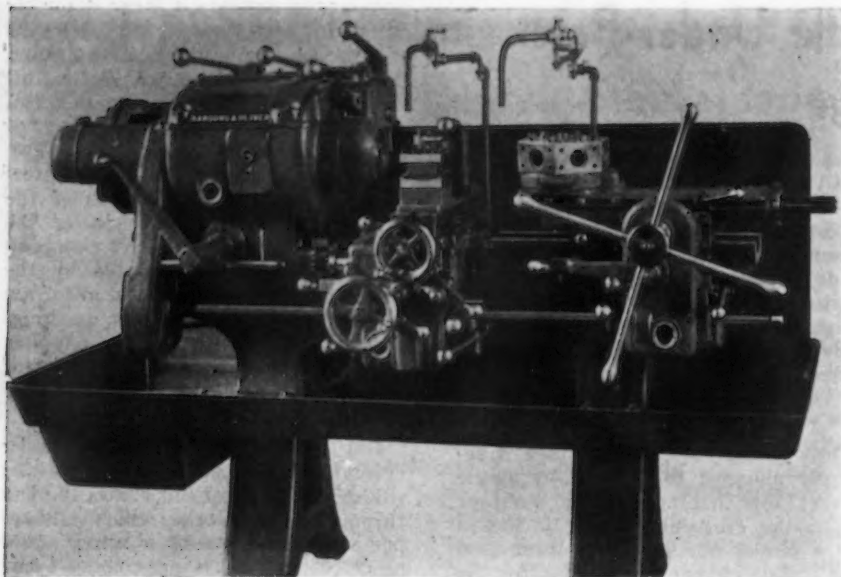
All working elements are inclosed by a double cover which streamlines a machine said to be adjustable throughout the entire range of oxy-acetylene cutting.

The adjustable slide for the blow-

pipe holders is so constructed that it may be swung into any horizontal position over a working arc of 250 deg. Protractor scales gage the tilting of the blowpipes in either direction parallel to the side of the machine through 90 deg., and up to 90 deg. at right angles from the side. One blowpipe, permitting cuts up to 12 in., is standard equipment; interchangeable blowpipes for heavier cutting and certain flame machining operations are provided. Design permits the simultaneous use of two blowpipes which can be mounted on either or one on each side of the machine.

Sensitive indicators prescribe prop-  
(Continued on Page 44)





#### AT LEFT

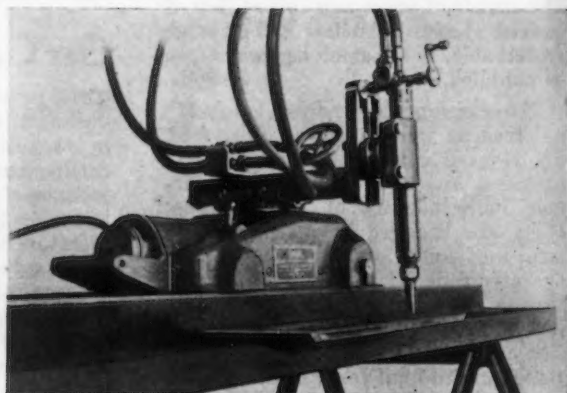
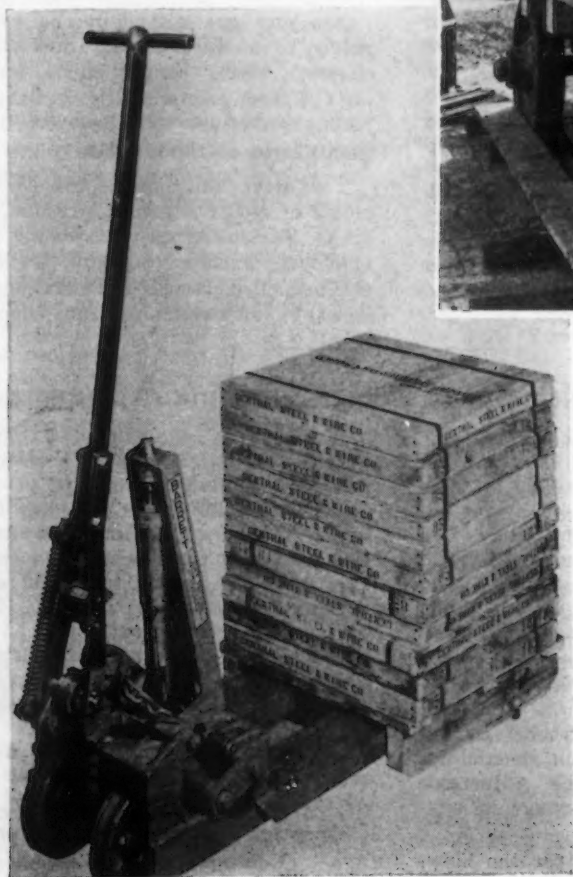
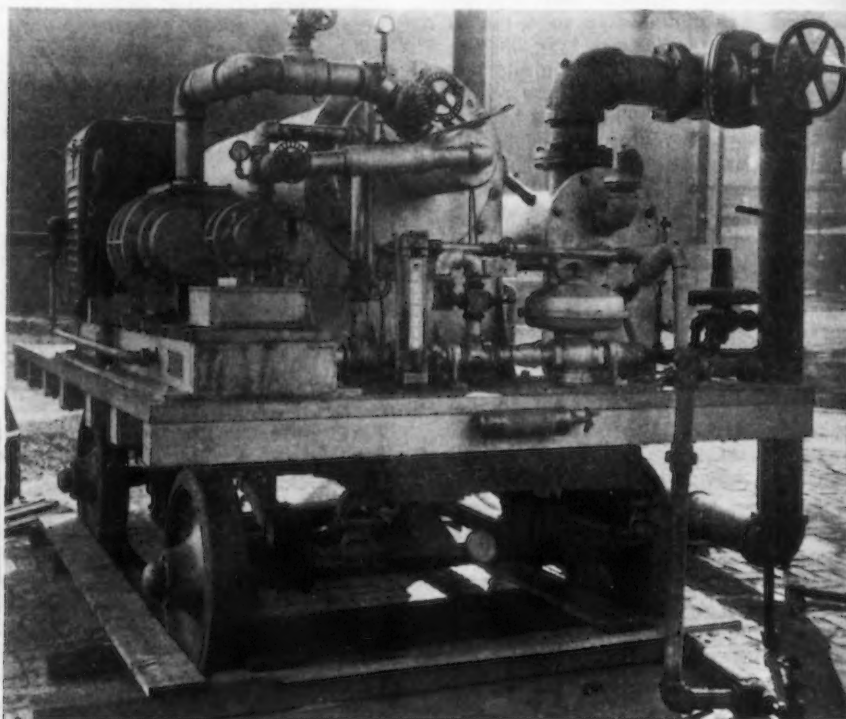
THIS turret lathe has integral head-bed casting, motor is bolted to end of head, rotor is pressed on to first drive shaft completing a combined power-machine unit. Review of details on page 41.

#### BELOW

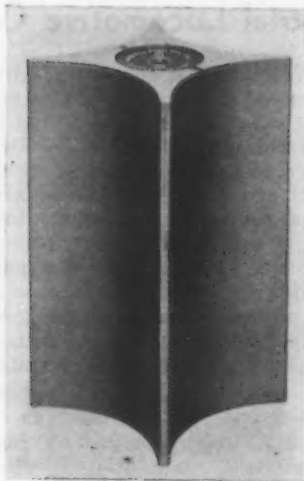
COMPLETE inert gas equipment, portably mounted when so desired, not requiring skilled attention, and free from monoxide gas dangers, is provided by this unit-assembly manufactured by Roots-Connersville Blower Corp., as described on page 41.

#### BELOW

THIS Barrett-Cravens Co., Chicago, tin-plate elevator is designed for handling the new type 4-in. skids on which tin plate is now quite commonly shipped. The carrying frame is 24 in. long by 15 in. wide and has 5 in. clearance between forks. The lift is single, compound or angle to a height of  $3\frac{1}{2}$  in. in lowered position. Ball bearing throughout, the equipment handles 3500-lb. loads,  $2\frac{1}{4}$ -in. lift from floor, with considerable freedom from effort.



THE fact that gas-cutting equipment can be made more machine-like for and in its operation is well evidenced in this new machine, Oxweld-Monitor, manufactured by Linde Air Products Co. The adjustability and the stability, after adjustment, of cutting mechanisms are described on page 41.

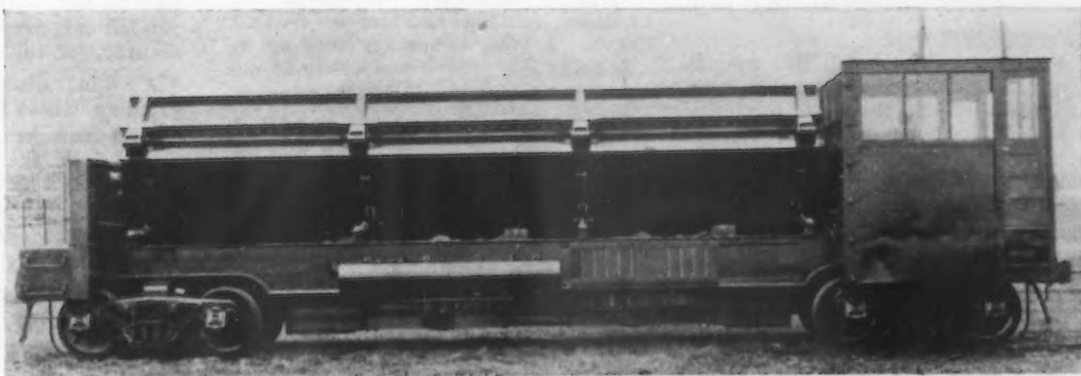


THIS new surface plate square, No. 559, manufactured by the Brown & Sharpe Mfg. Co., Providence, R. I., combines features of weight and shape which make it a convenient and rugged tool for face-plate use.



#### ABOVE

Possibilities of garage welding are presented and outlined in the description of this welding machine on page 44.



▲ ▲ ▲ THIS locomotive not only serves for hauling, spotting, etc., but pays its own way as described on page 44.



A SMALL Weston Electrical Instrument Co., Newark, N. J., foot-candle meter records light values with a complete dial record. See page 44.



THE reconditioning of small saws is accomplished through a ganging set-up on this new machine manufactured by Wardwell Mfg. Co., Cleveland, and described on page 44.



(Continued from Page 41)

er speed regulation through control by a shifting lever; this lever is connected to the guide handle, making it possible, it is said, to alter speed without stopping the operation. The equipment feed range is from 2 in. to 48 in. per min. The field of operation includes straight line cutting, straight bevel cutting, two bevels at a time, plate edge work, circle or ring diameters up to 100 in., and irregular shapes and curves.

The machine, blowpipe and nozzles, two 6-ft. lengths of track and radius attachment make up a standard equipment complete, ready to plug into the power line.

## Arc Welder For Thin Material

**A**N arc welder for use on thin sheets, plates and shapes by garages, metal-working shops and industrial plants, and consisting of a new small motor-generator unit, is announced by the Lincoln Electric Co., Cleveland. The equipment can be used on any alternating current power line including 110-volt circuit. See page 43.

Known as the SA 75, this unit is specified to deliver as low as 20 amp. at the arc without the use of auxiliary devices, thus opening up a new field of application for arc welding by providing the low, uniform welding current needed for fender and body repairs and at the same time offering availability for repairing bumpers, frames and other heavier materials, as well as repairs to cracked water jackets or cylinder heads.

Avoided necessity for preheating is said to eliminate heretofore advisable dismantling.

Uniform current supply of proper characteristics for electrodes as small as 1/16 in. suggests its use by metal-working shops and industrial plants on materials as light as 24 gage.

This new AC motor-driven type welder employs a 25-volt arc with a current range of 20 to 100 amp. The generator is of single operator variable-voltage type with 75-amp. N.E.-M.A. rating. The motor installed is the Lincoln "Linc Weld" 3-hp. squirrel cage induction type for across-the-line starting. The welder is supplied for alternating current 110 and 550 or special voltages; 3, 2 or 1 phase; 60 and 50 cycles as desired. Connections are also readily available for 220 or 440 volts.

Patented dual control provides independent adjustment of open circuit voltages and welding current.

The welder is 20 in. long, 16 in. wide and 40 in. high, and requires less than 2 1/4 sq. ft. of floor space. Two small wheels mounted on the base provide portable use.

## Industrial Locomotive Carries Its Own Pay-Load

**A** NEW locomotive for mines, steel mills and wide industrial use, pictured on page 43, is manufactured by the Differential Steel Car Co., Findley, Ohio. This equipment not only serves the usual purposes of a locomotive having a nominal rating of 36 tons when light and 76 tons when loaded, but additionally carries its own payload; this is made possible because of the fact that it is built as a designed unit consisting of an internal combustion power plant mounted in an under-frame capable of also carrying an automatic dump body such as is shown in dumping position on page 43. The power plant may be either Diesel or gasoline and may have me-

chanical or electric drive. Effective regulation of tractive effort required is claimed to be automatic in that, with a loaded train, the load in the unit body gives the necessary increased effort, while with a train light, the tractive effort is reduced because the dump body section of the unit body is running without its load. The locomotive dump body has a level-load capacity of 24 cu. yd., and a normal crown capacity of about 40 cu. yd.

The entire body and frame is of steel heavily reinforced, and electric arc welding, with Murex heavy-coated mineral electrodes, is employed in fabrication.

## Small Saws Are Ganged For Automatic Sharpening

**S**MALL metal saws are sharpened automatically in gangs in a new saw grinder brought out by the Wardwell Mfg. Co., Cleveland, which is designed particularly for sharpening milling, slitting and screw slotting saws. A gang of saws is lined up on an arbor and ground completely at one setting. A cutter is shown in grinding position on page 43.

The machine automatically indexes the saws, one row of teeth at a time, and the grinding is done with a wheel of suitable thickness and properly shaped to sharpen the tooth points and gum the throats in one operation. It is stated that it will sharpen all the saws in a gang within limits of plus or minus 0.001 in. of exact diameter.

The machine is fully automatic in its operations. It is rigidly constructed with a one-piece casting frame. Ball or bronze bearings are used throughout. The worm and gears run in oil. The grinding wheel spindle is mounted in the frame on ball bearings sealed against dust and dirt. The saw arbor is fitted to a horizontal slide which reciprocates under the grinding wheel on dovetail slides and is gibbed to take up wear. It is also arranged for vertical and horizontal adjustment. The reciprocating slide is operated by an eccentric which is adjustable for a stroke up to 3 in. The eccentric shaft is provided with a clutch which can be easily thrown in or out of connection, stopping the movement of the slide when desired in making preliminary adjustments.

A stop or alining gage is provided for quickly lining up the saw teeth when placing the saws in position for grinding and swings down out of the way after the saws are locked on the arbor.

The saws are fed at a speed of 28

teeth per min. by a 5/8-in. diameter index plate which is fastened to the end of the arbor. The feeding is entirely independent of the saws and requires no attention after the machine is started. The mechanism that feeds the saw against the grinding wheel also feeds the face of the tooth against the side of the wheel to grind off the face of the tooth and assuring, it is pointed out, precision in grinding and accuracy of the saw.

A 6-in. diameter 3/16-in. thick grinding wheel is used. A diamond dresser can be furnished, which is mounted on the wheel guard. This dresser has a horizontal adjustment to the wheel and swings in line with the center of the spindle and is also adjustable for any angle desired.

The capacity of the grinder is for saws from 2 to 5 1/2 in. in diameter with tooth spacing up to 3/4-in. pitch. The arbor has a capacity for holding a gang of saws up to 1 3/4 in. in thickness. The machine is furnished either with belt or motor drive.

## Pocket Meter Determines Existing Light Values

**T**HE Weston Electrical Instrument Corp., Newark, N. J., is marketing a foot-candle meter, shown on page 43, for instantly and accurately measuring light in factories, offices, laboratories, and wherever people work, play, study or congregate under light. Measurements are made of either day or artificial light. Colored glass scale-areas on the dial indicate what the light should be for the task or location, while the dial finger indicates just what it actually is. The heart of the device is the Weston photronic cell, which transforms light energy directly into electrical energy. This cell is connected to a sensitive Weston milliammeter, the scale of which is calibrated in foot candles.

# Gear Makers Convene at Milwaukee

PAPERS, addresses and committee reports in generous number, notwithstanding the fewer than usual sessions, featured the 13th semi-annual meeting of the American Gear Manufacturers Association, held at the New Pfister Hotel, Milwaukee, Oct. 22 and 23. In addition, an afternoon was devoted to inspection of operations in building speed reducers, motor reducers, and large marine drives at the plant of the Falk Corp.

Eighteen companies were elected to membership, the association now having 81 member companies, 11 academic members, and a total of 160 individual members. All sessions of the meeting were well attended.

A better feeling as to the general business outlook was in evidence. In welcoming the visitors to Milwaukee, Whitney H. Eastman, president of the Association of Commerce, expressed the conviction that business confidence is being rapidly restored and that "business generally is much better than most of us realize or are willing to admit."

"Business recovery is moving forward," he said. "The three economic factors—commodity prices, the composite pay envelope of America and business activity—which were so badly out of joint during the depression have been geared into line, and we are now ready for a forward movement."

"It is estimated that farm purchasing power for the crop year of 1934, even in spite of the drought, will be about a billion dollars over the 1933 crop year; and this increased purchasing power will prove to be a tremendous impetus all over the country," he stated.

The home building and modernizing programs which will begin to get under way after the turn of the year can be definitely counted on, Mr. Eastman believes, as the most important effort on the part of the Federal Government in hastening business recovery. The livestock industry, characterized as the largest and most important industry in America, was said to be enjoying a period of prosperity at this time, and to be looking confidently into the future.



JOHN CHRISTENSEN  
President, Cincinnati  
Gear Co., and president  
of the American Gear  
Manufacturers Association.

As to the gear manufacturing industry, it was reported at another session that for the first nine months of this year, business for all kinds of gears was 33 per cent greater than in the same period last year.

## To Be Represented on Durable Goods Council

Support of the Durable Goods Industries Committee was urged by H. H. Kerr, president, Boston Gear Works, Inc., in his report as chairman of the code authority of the gear manufacturing industry. This committee, he pointed out, has done remarkable work; it represents the durable goods industries, of which the gear industry is a part, and should be given every support. The greatest unemployment problems come definitely under the durable goods group and no program can be effective until ways and means are planned to start activity in this group and reemploy the large numbers that are now without work, he said.

Representatives of the gear industry's code authority attended the recent meeting (Sept. 14-15) of the Durable Goods Industries Committee.

In addition to the committee, there is to be a council made up of one delegate and an alternate, these to be representative of the industry, and preferably not to be a member of the code authority of that industry. Later in the A.G.M.A. meeting, appointment of L. R. Botsai, sales manager, Nuttall works, Westinghouse Electric & Mfg. Co., as delegate, and John H. Flagg, Watson-Flagg Machine Co., Paterson, N. J., as alternate to the council of the durable goods industries committee, was announced.

Mr. Kerr's report emphasized the fine cooperation of the members of the industry's code authority, and praised the work of J. C. McQuiston as secretary of the code authority. He was, in turn, recipient of a vote of thanks from the association for his devotion to the interests of the gear industry.

In a paper entitled "Whither Bound," E. S. Sawtelle, manager, Tool Steel Gear & Pinion Co., Cincinnati, discussed vividly various remedies that have been tried to effect economic recovery, scoring particularly shallow thinking based upon generalizing from a few exceptions.

In speaking of unemployment and the President's program of sharing the available work and holding hourly pay rates close to previous standards, Mr. Sawtelle said: "With the usual few exceptions, this was done, and for several years there was probably the best feeling between industry and employees that ever existed in this country. Both realized the other's point of view; both were suffering alike, and both felt that hard as it might be, the other side was conscientiously endeavoring to cooperate and do his best under trying circumstances."

"Labor has for many years been gradually coming into its own," he said in another part. "Both industry and labor have learned that the interest of one is the interest of all. Good feelings have been fostered by friendly relationship, particularly in many establishments that have worked out a system of internal collective bargaining giving employees full opportunity for expression and full co-





Operations in the manufacture of steel mill drives and of large marine drives were shown by the Falk Corp., Milwaukee, to members of the A.G.M.A., in convention Oct. 22 and 23. This view shows a battery of gear hobs.

operation in working through industries' problems. Those not experienced in the harmonious working of the great number of these organizations, and those whose ulterior motive was the collection of union dues, have decried all such plans for peaceable settlements of difficulties and harped back to a barbaric warfare."

P. W. Christensen, Cincinnati Gear Co., presented a paper on "The Fallacy of Price Cutting as a Basis of Getting Sales" at the same session, which was under the chairmanship of Howard Dingle, president, Cleveland Worm & Gear Co., and chairman of the association's commercial committee, formerly the commercial standards committee.

J. C. McQuiston, manager-secretary, in his report to the association urged use of the A.G.M.A. insignia in advertising and on letter paper. He announced the appointment of E. L. White, Pittsburgh, for several years connected with the gear industry, as assistant secretary of the association.

#### Technical Program Includes Welded Construction and Steel Castings

THE technical part of the program comprised six papers and the reports of 16 or more subcommittees of the general standardization committee, which is headed by A. A. Ross, engineer, General Electric Co., West Lynn, Mass.

Interesting examples of the application of welding in the construction of large gear cases, pinion stands and other units were shown by means of lantern slides during an address on "Welded Steel Construction," by Thomas Holloway, engineer, United Engineering & Foundry Co., Pittsburgh. Welded steel gear boxes for light drives and combinations of

welded steel plate and castings were pictured. On pinion stands a marked reduction in weight, with lower cost, was reported, and flexibility in designing was emphasized as an advantage of the welded construction. Views of the welding shop and diagrams of types of welds adopted as standard for covers, endplates and other parts were shown. An abstract of Mr. Holloway's address will be included in a forthcoming issue of THE IRON AGE.

Another instructive contribution was a paper on "Good Steel Foundry Practice in Gear Manufacture," by Arthur Simonson, vice-president, Falk Corp., Milwaukee.

"Manufacture of steel castings is still very much of an art, and not an exact science," said Mr. Simonson. "A great deal of guesswork and uncertainty has been removed as the result of research, and the development of equipment and control apparatus has put the manufacture on a more sure footing. Steels have been developed to meet almost every requirement as to tensile strength, ductility, hardness, electrical and magnetic qualities, resistance to pressure, wear, abrasion, temperature and corrosion.

#### Steel Castings Differentially Heat Treated

"The art making steel castings has progressed to a point where the physical properties of the metal itself are very well understood and it is possible to produce and reproduce material of any required composition with a high degree of regularity and so to heat treat it that any desired physical characteristics can be imparted to it. Differential methods of heat treatment have been developed so that varying

characteristics as to hardness and machinability can be obtained in different parts of the same casting within rather wide limits. Probably the great majority of the factors entering into the successful manufacture of steel castings are sufficiently under control of the operator to say that they have been reduced to science, but there are still others which are not yet in this class."

Most of the factors which are not under control affect the dimensions of castings in the rough, that is, unmachined, Mr. Simonson said. Several of the variables over which the foundryman has not complete control were discussed briefly. It is necessary, he said, that designing engineers should bear these in mind and provide sufficient tolerances to compensate for uncontrollable variations, and where it is not possible to do so otherwise, machining should be provided for.

Few of the gear manufacturers who do not have their own steel foundry appreciate the situation, and therefore their demands upon their suppliers for closeness in dimensions in rough castings are sometimes quite unreasonable, he said. The less stock which has to be removed in the finishing process, the less will be the cost of manufacture, but to pinch pennies in this direction is unwise and may result in dollars of expense put upon castings which may not finish to size.

British Standards Specifications for Machine-cut Spur, Helical and Bevel Gears were discussed in papers by Prof. F. A. Mickle, University of Michigan, Ann Arbor, Mich., and D. T. Hamilton, engineer, Fellows Gear Shaper Co., Springfield, Vt., and chairman of the A.G.M.A. committee on nomenclature.

Professor Mickle's discussion was

devoted almost entirely to the helical gear standard, and included a study of the strength formula as compared with that in the recommended practice of the A.G.M.A. A more conservative tendency was noted in the British practice, design for the same service tending to be heavier.

Mr. Hamilton confined his review to nomenclature. The section dealing with definitions indicates that the elements of gears were not analyzed in the same manner as in the A.G.M.A. nomenclature report. A number of important gear tooth elements were said to be omitted, and the method of handling not as complete, a remark not intended as a criticism of the British standards report, which, Mr. Hamilton stated, was an exceptionally fine piece of work. A point apparently overlooked is the application of symbols to a number of the important gear tooth elements. The subject of internal and herringbone gearing has been ignored, and helical gears have been covered only in a fragmentary manner, he said. Some of the definitions are in the form of algebraic expressions, which was one of the points the association's nomenclature committee tried to avoid.

A paper on "Helical Gears in Retrospect and in Prospect," by P. C. Day, Falk Corp., and another on "The Advantages of Sykes Herringbone Gears," by W. E. Sykes, Farrell-Birmingham Co., Buffalo, N. Y., were also presented at this meeting.

#### Working on Cast Iron for Gears

In reporting for the A.G.M.A. sub-committee on nomenclature, Mr. Hamilton stated that progress has been made in the nomenclature supplement dealing with gear dynamics and gear types.

The library committee, headed by M. T. Schumb, engineer, Boston Gear Works, Inc., is completing the gathering of material for the A.G.M.A. gear book, standards and tables. Some of the standards are in the hands of various sub-committees for rechecking. It is expected that these handbooks will be in form for printing within a few months. Condensing and reediting of some of the data, with the object of putting the book up in the best possible form, were urged in the discussion of the committee's report.

The metallurgical committee, headed by C. B. Hamilton, Jr., Hamilton Gear & Machine Co., Toronto, Canada, is working on cast iron for gears. Replies to a questionnaire indicate that A.S.T.M. tentative specifications for gray-iron castings A-48-32T, class 35, would be acceptable for small and

medium size gears; for large gears alloy irons and steel mixtures are employed. In Mr. Hamilton's absence, W. G. Fisher, General Electric Co., presented this preliminary report.

Companies elected at this meeting to membership in the association include: Abart Gear & Machine Co., Cicero, Ill.; Alling-Lander Co., Sodus, N. Y.; J. D. Christian, San Francisco; Dundore Mfg. Co., Reading, Pa.; Ganschon Gear Co., Chicago; Hartford Special Machinery Co.,

Hartford, Conn.; J. Morrison Gilmore, New York; Indiana Gear Works, Indianapolis; Johnson Foundry & Machine Co., Los Angeles; Michigan Gear & Engineering Co., Detroit; New Jersey Gear & Mfg. Co., Newark, N. J.; Palmer-Bee Co., Detroit; Precision Gear & Machine Co., Charlotte, N. C.; Quaker City Gear Works, Philadelphia; Universal Gear Corp., Indianapolis; Worcester Gear Works, Worcester, Mass.; Whartnaby Gear & Machine Co., Philadelphia.

## Testing Device For Wirebound Box Wire

**A**TENSILE testing device known as the "Rockaway Wire Tester," for determining the yield point of wirebound box wire, has been developed by Stapling Machines Co., Rockaway, N. J. The sponsoring company, which manufactures wirebound boxes, felt the need of a test for wire that would be superior to the usual "plier test" and yet that could be quickly applied.

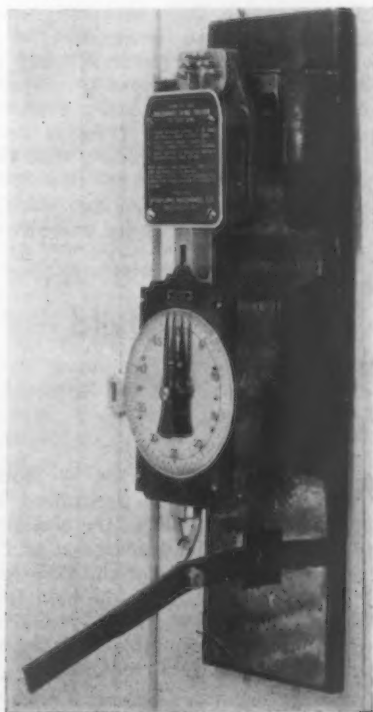
The device which has been developed for this purpose is intended to test wire ranging from 18 to 12 gage. The instrument is provided with a 50-lb. Chatillon spring scale through which the load is applied and read. A "telltale" pointer is provided which stops on the maximum reading or yield point. The wire is supported on small round pins, between which a plunger, with a slotted V-shaped loading center, reciprocates. Three pair of pins are provided to vary the length of the wire beam and thereby keep the reading on varying wire diameters within the range of the 50-lb. scale. It is

evident that the longer the beam on a given wire the lower will be the force required to bend it at the center. The reading taken on wire supported between the upper and closer pair of pins is designated as an "A" reading, between the middle pins a "B" reading, and between the lower pair a "C" reading.

A sample of wire approximately 2 or 3 in. long is used to test. It requires about 30 sec. to make the test, the actual pull on the handle being timed at 2 to 5 sec. It was found that this much variation in speed of applying the load did not vary the readings beyond allowable tolerances.

No effort was made to compensate for the dead load of scale and linkage. This was found to be near enough to a constant for practical purposes. The commercial tolerance in the readings was found to be plus or minus  $\frac{1}{2}$ -lb. It was found that commercial wire varied as much or more than that amount in the same coil. Acceptable wire, it was found, could vary in readings from 3 to 6 lb., and the wire mill found that their processes could be controlled to give this result without excessive difficulty.

The instrument is designed primarily to be used by the receiving clerk, the mechanic, or foreman in the users' plant, and by the inspector at the wire mill. It is intended that each coil be tested by the receiver, a minimum of three tests on each coil. The average of these readings will be taken and the wire accepted or rejected on the basis of this average.



## Air Conditioning Orders in September

**W**ASHINGTON, Oct. 30. — Orders for air conditioning equipment in September totaled \$1,098,184, according to the Bureau of the Census, and compare with a total of \$1,147,066 in August. In the first nine months of 1934 orders aggregated \$8,890,373 against \$5,479,928 in the corresponding period of 1933 and \$6,400,458 in the first nine months of 1932.





## British Iron and Steel Demand Receiving Fresh Impetus

**L**ONDON, ENGLAND, Oct 30 (By Cable).—Declining stocks of pig iron have led to substantial placing of new contracts, with the prospect of an increase in output rate. Sales are being made abroad to Denmark, Italy and Germany. Hematite specifying is quieter, but an early revival in demand is likely in view of the increasing activity of steel plants.

Orders for steel are also increasing. Semi-finished makers are well booked and find a slackening in Continental competition. Finished steel producers also are finding increased support

from the building trades and look forward to better business from the shipbuilders in view of recent steamship orders.

Exports also are expanding and better Indian business is expected under the new tariff. Esthonia has ordered 250,000 ship plates.

There is a moderate home and export demand for tin plate although bookings are below the existing high output rate. Broken Hill Proprietary Co. of Australia has decided to erect tin plate mills. This step will be preceded by some preliminary exhaustive studies.

Continental iron and steel demand is satisfactory except for plates and sheets, and good orders for wire rods have been received on the Continent from England, Sweden and Japan. The German excess quota, however, is creating some anxiety.

International Rail Makers' Association has refused its approval of a German rail contract with Turkey in which the terms involve a seven-year credit. Poland has booked a Russian order for 20,000 tons of rolled steel and 7000 tons of steel tubes, with the option of a further 15,000 and 8000 tons respectively providing similar amounts of Soviet ores are purchased.

convenes to consider the emergency "New Deal" legislation which expires next year, the convention will be the medium through which the nation's manufacturers will express their viewpoint upon the major national problems which Congress will consider.

From the Congress of American Industry officials of the National Association of Manufacturers expect to bring out a platform upon which industry can stand unitedly during the coming year. The association's committee on future relations of Government to industry under the chairmanship of James W. Hook, president of the Geometric Tool Company, of New Haven, Conn., will present its report dealing with the NRA for consideration by the hundreds of manufacturers who will attend the convention.

Among the speakers will be Donald R. Richberg, chairman of the NRA Policy Board, and Dr. Neil Carothers, professor of economics at Lehigh University.

Prior to the two-day meeting of manufacturers, the National Industrial Council composed of State and other manufacturers' associations, will meet Dec. 3 and 4 to present its recommendations to the Congress of American Industry.

## Steel Institute to Publish Bulletin

"STEEL FACTS" is the name of a new publication introduced this month by the American Iron and Steel Institute, containing pertinent information regarding the industry. It contains statistical data collected by the institute and other agencies presented in a highly comprehensible manner and also information regarding new uses of steel. Of particular interest in the first issue is a brief story on the origin of the nomenclature of pig iron.

Much of the statistical information is presented by means of charts, graphs and tables designed for quick reading. The bulletin will appear at frequent intervals, probably monthly.

### British Prices, f.o.b. United Kingdom Ports

| Per Gross Ton                        |                      |
|--------------------------------------|----------------------|
| Ferromanganese, export .....         | \$9                  |
| Billets, open-hrth. .....            | \$5 10s. to \$5 15s. |
| Tin plate, per base box .....        | 18s. 2d.             |
| Steel bars, open-hearth .....        | \$7 17½s.            |
| Beams, open-hrth. .....              | \$7 7½s.             |
| Channels, open-hearth .....          | \$7 12½s.            |
| Angles, open-hearth .....            | \$7 7½s.             |
| Black sheets, No. 24 gage .....      | \$9 5s.              |
| Galvanized sheets, No. 24 gage ..... | \$11 5s.             |

### Official Continental Prices, f.o.b. Continental Ports

| Per Metric Ton, Gold £  |             |
|---|-------------|
| Current dollar equivalent is ascertained by multiplying gold pound price by 124.14 to obtain franc equivalent and then converting at present rate of dollar-franc exchange. |             |
| Billets, Thomas .....   | \$2 7s.     |
| Wire rods, No. 5 B.W.G. ....  | \$4 10s.    |
| Steel bars, merchant .....  | \$3 5s.     |
| Sheet bars .....  | \$2 8s.     |
| Plates, ¼ in. and up .....  | \$4         |
| Plates, 3/16 in. and 5 mm. ....   | \$4 2s. 6d. |
| Sheets, ½ in. ....  | \$4 7s. 6d. |
| Beams, Thomas .....   | \$3 2s. 6d. |
| Angles (Basic) .....  | \$3 2s. 6d. |
| Hoops and strip base .....  | \$4 2s. 6d. |
| Wire, plain, No. 8 .....  | \$5 7s. 6d. |
| Wire nails .....  | \$5 15s.    |
| Wire, barbed, 4-pt. No. 10 B.W.G. ....  | \$8 15s.    |

## N.A.M. Will Build Platform at Dec. "Congress"

**A** DISTINGUISHED list of industrialists has been announced by C. L. Bardo, president of the National Association of Manufacturers, as the sponsoring committee of the Congress of American Industry to be held Dec. 5 and 6 at the Waldorf-Astoria, in New York, in conjunction with the association's annual convention.

Coming shortly before Congress

## Acetylene Association Program Includes Steel Mill Applications

**O**XY-ACETYLENE cutting with particular reference to steel mill applications will be the topic of one of the five technical sessions arranged for the 35th annual convention of the International Acetylene Association, to be held at the William Penn Hotel, Pittsburgh, Nov. 14, 15 and 16. Metallurgical aspects of the oxy-acetylene process, pipe welding and testing, transportation, and education and safety in welding are other technical topics.

The convention will open with a general session which will include award of the Morehead medal, and close with the annual business session, to be followed in the evening by the annual dinner. An industrial drama entitled "Profits of Progress" will be presented by the association on the evening of Nov. 14 at the Davis Theater, Pittsburgh.

Papers at the oxy-acetylene cutting session, on the afternoon of Nov. 14, will include "Oxy-Acetylene Flame Cutting of Wing-Type Billets," by L. Gerald Firth, president, and L. B. Knox, superintendent of melting department, Firth-Sterling Steel Co.; "Welding and Cutting in the Making and Marketing of Steel," by T. R. Moxley, general master mechanic, Wheeling Steel Corp.; and "Hard Surfacing in the Steel Mills," E. E. LeVan, Haynes Stellite Co. W. D. Miller, superintendent, electrical and mechanical division, Bethlehem Steel Co., Johnstown, Pa., will preside.

At the session on metallurgical aspects of the oxy-acetylene process, Nov. 15, J. H. Critchett, vice-president, Union Carbide & Carbon Research Laboratories, Inc., will speak on "The Metallurgy of Welding," and C. W. Obert of the same company will present a paper on "The Advantages of Flame-Cut Surfaces for Welding." "A Comparative Study of Cutting Methods as Applied to Structural Steel" will be presented by Prof. J. H. Zimmerman, Massachusetts Institute of Technology. Dean E. A. Holbrook, school of engineering, University of Pittsburgh, will preside.

At the session on pipe welding and testing, under the chairmanship of Dr. F. N. Speller, National Tube Co., J. J. Crowe, chief research engineer, Air Reduction Sales Co., will present a paper on "Welds for High Tensile Strength," and J. W. Owens, director National Weld Testing Bureau, will speak on the "Dependability of Commercial Methods of Testing Welds." "Production Methods Used on Welding for Construction Purposes," by G. E. Deatherage, superintendent of construction Carbide & Carbon Chemical Corp., and "Pipe Welding," by

John Zink, Heating, Piping and Air Conditioning Contractors National Association, will also feature this session.

"Construction of Transportation Vehicles by Welding" will be outlined

by G. O. Hoglund, supervisor of welding, Aluminum Co. of America, at the transportation session, Nov. 16, which will also include papers on maintenance of railroad rolling stock, track welding and uses of oxy-acetylene process in maintenance of way work. Four or more papers, including one on "Safe Practices in Oxy-Acetylene Welding and Cutting," by E. F. Blank, Jones & Laughlin Steel Co., have been arranged for the session on education and safety.

## Republic Postpones Merger Ratification Date—Large Stockholders Approve

**T**HE special meeting of stockholders of the Republic Steel Corp., called for Oct. 30, to vote on the proposed consolidation of Republic and the Corrigan, McKinney Steel Co., is to be postponed until Dec. 17. In a letter to stockholders, T. M. Girdler, president and chairman of the company, has pointed out that the management, its auditors and counsel have been continuously engaged in the preparation of the registration statement, but it has not yet been completed and cannot be filed until after the date originally fixed for the stockholders' meeting. This possibility was foreseen when the consolidation plan was first presented to stockholders and provision was made for the postponement of the meeting in such case.

Mr. Girdler further stated that "the plan has been well received by the stockholders as a whole, and the number of proxies and deposits thus far received has been gratifying."

In connection with the request for immediate deposit of preferred stock as well as the submitting of proxies for both common and preferred under the plan, Mr. Girdler added that "the board of directors has adopted a resolution providing that stockholders who have deposited or hereafter deposit preferred stock under the plan shall be entitled to withdraw their stock from deposit upon surrender of their deposit receipts to one of the depositaries at any time up to the hour and date of the stockholders' meeting at which the plan shall be approved. In other words, the deposit will be in substantially the same position as the proxies, which are legally revocable until voted."

The depositaries under the plan are: Bank of the Manhattan Co., New York; Continental Illinois National Bank & Trust Co., Chicago, and the Cleveland Trust Co., Cleveland.

### Cleveland Cliffs Stockholders Approve

Stockholders of the Cleveland Cliffs Iron Co. have approved the sale of the business property and assets of

the Corrigan, McKinney company to Republic upon the terms contained in the contract which has been entered into between these two companies and which will be considered at a special meeting of the stockholders of each company called for that purpose. Out of a total of 895,530 shares of preferred and common stock entitled to vote at the Cleveland Cliffs Iron Co. meeting, 830,791 shares were represented in person or by proxy and the vote in favor of the merger was unanimous.

The Cleveland Cliffs company owns 110,042 shares of the common stock of Republic Steel Corp. and 109,375 shares of common stock of the Corrigan, McKinney Steel Co., which stock will now be voted at the Corrigan, McKinney and Republic meetings in favor of the sale.

The Cleveland Cliffs Iron Co. also owns all of the common stock of the McKinney Steel Holding Co., which owns 671,875 shares, or 55 per cent of the voting stock of the Corrigan, McKinney Steel Co.

### McKinney Holding Company Also Favors Consolidation

Stockholders of the McKinney Steel Holding Co. have also passed a resolution authorizing the officers of the company to vote the company's stock in the Corrigan, McKinney company in favor of the sale of the steel company's business and assets to the Republic corporation.

Of the 72,500 shares of preferred stock outstanding, approximately 57,600 shares were present, of which 57,105 shares, or 78.77 per cent of the total issue, voted in favor of the sale and only 461 shares voted against it. All of the 10,100 shares of common stock voted in favor of the sale.

Gilby Wire Société Anonyme, Paris, France, has been organized to handle the European business of the Gilby Wire Co., Newark, N. J. Gabriel Fodor, formerly European manager of the company, will direct the affairs of the French company.



## Sheet Metal Distributors Meet At Atlantic City

**T**HE National Association of Sheet Metal Distributors met at Atlantic City Oct. 23 and 24. In opening the convention the president, A. W. Howe, who is also vice-president of the National Wholesale Hardware Association, voiced his agreement with A. D. Whiteside, member of National Industrial Recovery Board, who had addressed a joint meeting of wholesalers and hardware manufacturers, that the wise thing to do at this stage of the situation is to put money into durable goods as a valuable inventory later on. He reminded his hearers of Mr. Whiteside's comment that there would certainly be an NIRA in 1935 and that NRA had shown how to do business at a profit. From now on it would be a matter of administration.

The first speaker, following the president's opening remarks, was Henry A. Roemer, president, Sharon Steel Hoop Co., Sharon, Pa., whose topic was "The Distribution of Sheets Under the Steel Code." Mr. Roemer opened his remarks with a statement that business must now think of making money instead of saving it. He pointed to the great potential market for steel sheets that is in sight: More automobiles, beautification of homes of the nation, labor-saving household appliances such as washing machines, refrigerators, and the great new market now here—steel houses. He dwelt to some extent upon the need for the application of the golden rule in industry, having regard for the sound business premise involved—that of better purchasing power on the part of the working people. He ended his talk by a recommendation for fair wages and decent treatment of employees.

The next speaker was F. J. McNeive, of W. F. Potts, Son & Co., Philadelphia, Pa., whose topic was "Sheet Steel Differentials and Quantity Extras." The differential of \$2 a ton, Mr. McNeive averred, was inadequate for distributors and called for the finding of some way of obtaining the relief that was much needed. Discussion followed Mr. McNeive's remarks, and a fair cross-section of opinion, representing various parts of the country, was obtained. This opinion indicated that while the present differentials appeared satisfactory to a majority of those represented, a better arrangement on corrugated forms than that existing is desired. It was the purpose of the discussion to draw out the opinion of the distributors in order to assist the committee to function toward better arrangements.

Following this discussion, R. H. Lyon, of Lyon, Conklin & Co., Inc.,

Baltimore, spoke on "The Classification of Sheet Metal Distributors." His comments called for a proper relation between the mills and the distributors, based upon desire for such a relation, faith and understanding. This brief talk was followed by open discussion from the floor.

The Wednesday morning session was mainly occupied with matters pertaining to the codes. Secretary George A. Fernley read the constitution and by-laws as revised in accordance with the provisions of the NRA. Adoption of the revised form followed.

F. J. McNeive, chairman of the divisional code authority for the sheet metal distributors, gave his report, naming the several committees that had been appointed.

Secretary Fernley pointed out that the labor board is endeavoring to put some limit upon the amount of overtime that is to be permitted under the code, even though time and one-third is paid to employees so working.

Discussion took place on the subject of price filing and was mainly in nature of queries from the members as to various provisions and their application. The chair commented that if there is a chance of stopping price cutting, filing should do it.

It was also brought out that any distributor that is not a member of the divisional code authority is eligible to serve on the regional code committee.

At the close of the session, President Howe was presented with a beautiful silver pitcher, F. O. Schoedinger, Columbus, Ohio, making the presentation.

### Bethlehem's Loss Heavy In September Quarter

**T**HE Bethlehem Steel Corp. suffered a net loss in the third quarter of \$2,400,126, after interest depletion, depreciation and other charges. In the preceding quarter a profit of \$3,441,642 was reported, while in the third quarter last year, the company sustained a net loss of \$283,097. In the first nine months of this year, net profit amounted to \$139,472, compared with a loss of \$9,365,394 in the corresponding 1933 period.

The Bethlehem company operated at an average of 22.8 per cent of capacity in the past quarter, compared with 51.8 per cent in the June quarter and with 40.8 per cent in the September quarter last year. Current operations, according to Eugene G. Grace, president of the company, are at about 26 per cent of capacity.

No dividend action on the preferred stock was taken at the regular quarterly meeting, although the company declared the regular dividend on this issue at the end of the June quarter.

In discussing business conditions, Mr. Grace stated that he saw no indication of any marked pick-up in the steel industry during the fourth quarter. He did admit, however, that orders have improved slightly in the last month. In the third quarter, nevertheless, the company's unfilled orders declined from \$70,436,890, as of June 30, to \$58,476,986 on Sept. 30.

Mr. Grace also said he had heard no proposals, or even rumors, of wage cuts in the industry. In discussing the code of fair competition, he referred to the recent utterance of Donald R. Richberg regarding a continuance of present policies as being a "fair and definite statement on the subject."

A. H. S. Post, president, Mercantile Trust Co., Baltimore, has been elected a director of the Bethlehem company, succeeding the late William E. Corey.

### Milwaukee Metals Group Offers Treating Course

**T**HE Milwaukee Chapter of the American Society for Metals is conducting a six weeks' course on treating of metals, sessions to be held on six consecutive Mondays, which began Nov. 5 at 8 p. m., in the administration building of Marquette University. The sessions are open to Chapter members, but it is the aim of the organization to have not only students but also engineers in manufacturing plants in the Milwaukee district attend.

Among the speakers listed are: David C. Zuege, Sivyver Steel Casting Co., and Chapter president; J. Fletcher Harper, Allis-Chalmers Mfg. Co.; Ralph Hoenschield, president, Commercial Steel Treating Corp., Detroit; J. R. Huston, Harnischfeger Corp.; R. O. Woodward, George H. Smith Steel Casting Co.; Harold Etherington, Milwaukee Vocational School; S. L. Hoyt, A. O. Smith Corp., and Prof. J. E. Schoen, College of Engineering, Marquette University. If interest warrants, it is hoped to offer additional classes.

### Ludlum Steel Shows Third Quarter Profit

**A**LTHOUGH monthly sales for the third quarter fell off 48 per cent as compared to sales during the first half of 1934, Ludlum Steel Co.'s statement for the third quarter of 1934 shows a net profit before Federal taxes of \$7,570.82 and for the first nine months of 1934 a net profit before Federal taxes of \$442,437.



## THE WEEK IN WASHINGTON

### A. F. of L. Planning New Bid for Power

*It Expects New Congress to Be More Receptive to Organized Labor Pressure Than the Administration Has Been*

WASHINGTON, Oct. 30.—Organized labor again has set in motion its drive for the 30-hr. week and higher wages. It has also renewed its campaign for recognition on code authorities and greater recognition on the National Industrial Recovery Board. Further, it proposes to ask that the collective bargaining section of the Recovery Act be strengthened.

These sweeping proposals of the American Federation of Labor were made known quite definitely by President William Green last Thursday at a meeting of the NRA Labor Advisory Board. They came fresh from the recent convention in San Francisco of the federation. Especially impossible and ironic as are "demands" for the 30-hr. week and higher wages in the face of deficits being piled up by some of the larger industries, such as iron and steel, organized labor nevertheless insists it will fight vigorously for the program. Looked upon as once more bringing to grips industry and labor, with prospects of additional strife and turmoil and further halting recovery, the issues apparently will have to be determined by the White House. While the demands for the shorter week and higher wages are immediately before the newly created National Industrial Recovery Board, it is strongly believed that since President Roosevelt has taken over greater personal direction of the board he will be personally faced with their settlement. This belief is strengthened by the fact that because of the widely divergent economic views reflected in the board member-

By L. W. MOFFETT

Resident Washington Editor, THE IRON AGE

ship it may well see fit to take the problems to the White House.

#### Mr. Green States A. F. of L. Position

The position of organized labor was made known by Mr. Green immediately prior to the meeting of the Labor Advisory Board at which he presided as acting chairman. He made known the views of American Federation of Labor in announcing that prior to the San Francisco meeting he had petitioned for a reopening of the automobile code which expires at midnight Nov. 3. While some of the demands announced were especially applicable to the automobile code, the proposal for the 30-hr. week and higher wages is meant to apply to industry generally, certainly to the major industries of the country.

Lasting three hours, the meeting of the Labor Advisory Board was largely attended, and while said to have been devoted to plans for a public hearing on the automobile code was of course clearly indicative of organized labor's attitude toward labor provisions of codes generally. Among those at the meeting in addition to Mr. Green were Secretary of Labor Perkins, Rose Schneiderman of the Women's Trade Union League; Maj. George L. Barry, president, Pressmen's Union; Sidney Hillman, labor member of the NIRB; John P. Frey, head of the Metal

Workers' Union of the A. F. of L.; Father Francis J. Haas, labor representative of the general code authority; Dr. Gustave Peck, executive director of the Labor Advisory Board, and Margaret Stabler, secretary of the board.

The unanimity of views on the program was not made known and it is assumed there was a difference of view. At least in the past Miss Perkins, while asking for shorter hours, did not support a uniform 30-hr. week and opposed it when it was proposed at the last session of Congress in the Black-Connery bill.

It was vigorously opposed also by General Hugh S. Johnson, former NRA administrator. The White House has never made known its position but the supposition is that it also opposes the 30-hr. week and that it would be particularly opposed to it at this time when it is seeking closer cooperation with industry and banking in a strong move to stimulate private enterprise and absorb as much as possible of the large and alarming unemployment before winter sets in. Moreover, it is not believed that many officers of the American Federation of Labor themselves think that industry could possibly turn to the 30-hr. week and pay higher wages without meeting with disaster and almost total collapse of activity and employment.

#### Drive Will Be Pushed

Nevertheless, the drive is to be pushed and by reason of the growing opinion that the next Congress promises to be exceptionally radical, or-



ganized labor feels that, if industry itself would not voluntarily comply with its demands—and of course it could not possibly do so—the Black-Connerly bill or similar legislation can be jammed through Congress. Also there is doubt that even a Presidential veto might stop its enactment into law. This is based on the view that the Administration might be embarrassed with an overwhelming majority, which it will run to excesses that cannot be controlled. This view, however, might be moderated by the fact that farm leaders are organizing a drive against the 30-hr. week and force Congress to modify any views it might have in favor of the shortened week. The farm leaders, sharing the view of industry and the public generally, see in the 30-hr. week, even if it were workable, inevitable rise in prices and for the farmers this would mean loss of any benefits derived from the A.A.A.

It is expected that the National Industrial Recovery Board, or some of its members at least, will "sound out" industries to see what, if any, reduction can be made in hours, hoping that if results are obtained, they can head off legislation for the 30-hr. week. It is clear there will not be much sounding out necessary so far as some of the major industries are concerned. For they have given emphatic answer to suggestions for further reduction in hours by saying it was not possible. Some of them have clearly indicated also that rather than to attempt to do so they would withdraw from codes. The automobile industry itself has complained that it has received no especial benefits from its simple code, aside from the fair practices, and its attitude toward labor's demand may well be accepted as pointing the position of other industries. What this may mean to the code structure generally is a matter of considerable importance. More than one industry today is giving serious consideration as to its future "after NRA." This was a subject at the fifteenth annual convention in Washington last week of the National Coal Association, which went on record against the 30-hr. week. The 30-hr. week has been especially strongly urged upon the industry by John L. Lewis, president of the United Mine Workers of America, considered by many to be the outstanding organized labor leader of the country.

#### Demands Made in Auto Industry

With the exception of its particular application to the automobile code, the position announced by Mr. Green in making known he had asked for reopening of that code was clearly the attitude of the American Federation of Labor toward industries generally as to hours and wages.

These are the "demands" made in connection with the automobile code:

Reduction of the hours from an average of 40 to 30 per week.

Increase in minimum rates of pay. Better rates in classes above the minimum.

Elimination of the merit clause.

Elimination, so far as possible, of seasonal peaks and dips.

More recognition to idea of figuring pay on an annual basis.

Like the great stir of last spring by the Amalgamated Association of Iron, Steel and Tin Workers for demands upon the steel industry, the demands being made by organized labor upon the automobile industry are untimely, if they are really serious. For the automobile industry is running into declining production and sees no means of checking the seasonal dips. The proposal for fixing income on an annual basis evidently is taken from a recent broadcast by President Roosevelt. While several industries have adopted this policy it is not believed its general adoption under prevailing conditions is at all probable.

In addition to the foregoing demands, organized labor, said Mr. Green, will ask for the following when Congress considers continuance of the NRA: Recognition of labor on code authorities; more adequate representation of labor on the NLRB; continued elimination of child labor and of unfair trade practices and strengthening of the collective bargaining section.

Plans to strengthen the collective bargaining section were not detailed. Apparently they were made known as a means of countering forthcoming attacks by industry against the trouble-making section. Especially has there been a broad demand that the section at least be clarified.

#### Interpretation of Section 7-a

Meanwhile, organized labor is trying to push to its utmost interpretation of the section as laid down by the National Labor Relations Board in the Houde Engineering case. Or, if technically it was not an interpretation, it at least clearly laid down the majority principle, giving to the automotive union at the Houde plant the exclusive right of collective bargaining, though the Houde company has declined to abide by the decision.

Taking this decision, the A. F. of L. is trying to entirely upset the National Automobile Board, set up by President Roosevelt. The board provides for proportional representation. The American Federation of Labor wants it junked and have the President set up a new board like the National Labor Relations Board and the National Steel Labor Relations Board. With the San Francisco convention going "vertical," automotive union officials evidently think they have more power to drive through this and other demands than they did under the craft system.

Demands for abolition of the automobile board were made known following a series of conferences in

Washington last Friday which Francis Dillon, chief of the A. F. of L. automobile organizers, held with high A. F. of L. officials. Mr. Dillon said automotive workers were not satisfied with settlements made by the automobile board, headed by Dr. Leo Wolman, and with refusal of automobile manufacturers to give exclusive right of bargaining to any single union.

In making known demands upon the automobile industry, Mr. Green declared that the 40-hr. week with "unnecessary exceptions" brings the average up to 42-hr. The merit clause, he said, is interpreted by organized labor to mean recognition of company unions. He objected to seasonal dips in the automobile industry—so does the industry "object" to them—and said that during peak production the industry employs thousands of additional workers from surrounding communities and when the dip starts they are thrown out to shift for themselves. More recognition, he declared, must be given to the idea of figuring pay on an annual basis.

In stating these demands, Mr. Green took occasion to express "grave regret" that Chief Justice A. A. Wheat of the Supreme Court of the District of Columbia had declared the railroad retirement act to be unconstitutional. Mr. Green said that he was confident that if the higher courts sustain the decision the act will be revised by Congress.

## NSLRB Orders Steel Hearings Continued

WASHINGTON, Oct. 30.—The National Steel Labor Relations Board has ordered continuation of hearings, involving the Youngstown Sheet & Tube Co., and the Acme Steel Co. of Illinois and their workers, the Youngstown case being adjourned to Nov. 12 and 13 and the Acme case to Nov. 14. The hearings will be held in Chicago.

Lodges of the Amalgamated Association of Iron, Steel and Tin Workers have petitioned for elections by employees in the cases. The Indiana Harbor and South Chicago plant of the Youngstown Sheet & Tube Co. and the Chicago plant of the Acme Steel Co. are involved. Original hearings were held Oct. 14 and 15. The cases were to have been heard last Wednesday but continuation was agreed upon.

Rogers Brown-Lavino Co., Philadelphia, New York and Boston, has been appointed agent of the Tonawanda Iron Corp., Buffalo, for the sale of Tonawanda pig iron in eastern territory.

Perfex Radiator Co., Milwaukee, maker of heat transfer units, has taken over the Central Radio Corp., Beloit, Wis., and has organized the Perfex Controls Co. to carry on the radio and electric parts business.

# Production Control Policy On the Way Out

**W**ASHINGTON, Oct. 30.—Though lacking confirmation by the tight-lipped National Industrial Recovery Board, reports that it has let down on the old policy of controlling industrial production are believed to be true. The subject is one of considerable controversy within the administration but it is clear that greater consideration is being given to the consumer phase of the recovery program and that advocates of lifting production control finally have won their point. The idea has been emphasized repeatedly by Leon Henderson, chief, Division of Research and Planning, and he is credited with having brought about a modification of the old policy.

Lifting of production control would mean nothing to operations of the iron and steel industry, the metal-working industry, the automobile industry and other of the larger industries which represent the vast bulk of employment under normal conditions. The automobile industry has no code restriction as to production, while output in steel and metal-working lines is greatly below any restrictions where they apply. In steel the only production control provided for bars construction of new blast furnace, Bessemer converter and open-hearth capacity.

Advocates of freedom of output, however, contend that the capital goods industries would be benefited by developing demand for more efficient machinery to bring about increased output at lower costs and at the same time increase employment. Whether theoretical or not, supporters of the plan state that the old theory of restricting the number of machine hours and barring installation of new machinery certainly has not operated effectively. It has been estimated that approximately 15 per cent of the codes limit the number of machine hours while 8 per cent put restriction on installation of new machinery. Argument has been made that this policy has kept prices up whereas a relaxation on production control would encourage purchase of new equipment and mass production with consequent lower prices, thus opening up increased markets and increasing employment. There are those, of course, who say this policy would work to the disadvantage of inefficient plants, which would be compelled either to close down or modernize. Advocates of the lifting of restriction say this is sound economy. In the early days of NRA, General Johnson said such plants, unless modernized, would be "blotted out."

Supporters of the plan, including

such organization as the Durable Goods Industries Committee, long have urged such a move would stimulate flow of private capital, a move that the administration obviously is trying to encourage. The President's latest public demonstration of the policy was made manifest in his address before the American Bankers' Association which undoubtedly resulted in a better understanding between the administration and the bankers, an understanding that may result in tangible improvement in industry through private loans. Some bankers, however, contend the difficulty lies in finding borrowers.

Though lifting production control is only one, though an important element in "planned economy," those favoring removal of restrictions think it will be a substantial factor in turning loose savings that have long lain idle and credit and turn capital into purchases of durable goods.

## Deflation and Durable Goods

At the same time there appears to have grown up in Washington, as well as elsewhere, a feeling that the durable goods will take an important yet only a secondary position in the next year or so in renewed industrial activity. Instead of pinning faith of strong resurgence in steel, machinery, etc., the hope appears to lie rather on consumer goods. By some this has been termed a "defeatist" program and not much more than an apology for failing to find a way to recovery and for justifying continued heavy outlay of Federal relief rolls.

The durable goods in which chief stimulation is looked for is said to be through new inventions, or in products that have not been on the market long, including air-conditioning equipment, refrigerators. Some private economists contend that this view is sound and look for inactivity among durable goods industries until the so-called surplus arising from overbuilding in the boom period has been overcome.

Coming upon the heels of the reported plan of NRA to lift production restrictions in codes is the suggestion of President William Green of the American Federation of Labor that all production in the United States be increased 30 per cent. His proposal is not, of course, entirely similar to the reported NRA plan. The suggestion of Mr. Green calls for an arbitrary raising of production, adjusted "to consumption needs." The NRA plan, as reported, would be of a permissible character. It would allow producers to raise production as re-

quirements develop and permit them to install new machinery if they desire, whereas under present restrictions this often cannot be done. Mr. Green's idea would mean lifting of production by a stated amount through a Presidential "invitation" to all industries, the idea being it would absorb unemployment.

"If the nation-wide level of all production were lifted 30 per cent in a balanced program, adjusting production to consumption needs, each industry would then be assured that all other industries would increase their production, and the wealth produced by putting labor to work would create income to buy the product of all."

Mr. Green cannot possibly be more desirous than industry that production be increased and employment absorbed. But his plan is looked upon as being not only rather vague but impractical. Barring production which may be halted by code restrictions, it is to be assumed that production now is gaited to consumption needs, and even that some output is being stocked as a means of affording employment. The iron and steel and virtually all other large industries, now at low operating levels, have in the past done considerable stocking for this single purpose. While it has let down with the approach of the inventory period, the practice may be expected to be resumed to the extent that the industry can afford it by drawing further on treasuries which are already in the red. Jumping production by an arbitrary percentage is another matter. The "balanced program" is an industrial Utopia long sought but never found, and in the heavy industries at least production is either adjusted to "consumption needs" or is in excess of such needs. As Mr. Green shows, in pointing out that unemployment in September, 1934, rose to 10,951,000, the greatest since the NRA went into effect, the gains in jobs were in the retail or consuming lines.

If there is some method of developing active requirements for durable goods, by making the long-term bond market attractive, or otherwise, and durable goods interests have repeatedly pointed out that potentially there is an unprecedentedly large market for their goods, the unemployment problem will see the quickest and most satisfactory solution possible. It hardly can be solved by any fiat, governmental or of other form; nor by demands for a 30-hr. week. Hours and wages themselves will be reduced to simple problems once the employment is engaged at a high level, inasmuch as hours and wages are just as much subject to competitive conditions as are industrial goods. And industry is as thoroughly keen for the speeding of that day as Mr. Green and the American Federation of Labor are.

Meanwhile, Donald R. Richberg, rated as the administration's emissary to spur private industry, during



the past week voiced some views that in spots would almost outdo the most ultra-conservative of the Old Dealers at whom he enjoys firing satiric darts. But he drew criticism when in addressing the Bond Club in New York he practically told private capital and industry if they did not get behind the public works and housing program the Government itself would proceed with the job. Coming immediately after the President's address to the bankers, the talk was given unusual significance, whether such construction on his words was or was not justified.

#### Relying on PWA

For the chief reliance now seems to lie in a huge public works construction program, including commercial building slum clearance, modernization and new home construction, though the latter will not get under way until next spring. Other work in mind includes subsistence homesteads, rural farm communities, hospitals, schools, etc.

Mr. Richberg was emphasizing the necessity of putting men back to work, to be shifted from relief rolls, and said the most fertile field lies in housing and other building.

He then gave vent to this view:

"If private initiative is so weak, if private capital is so timid, if management and labor are so lacking in vision that private enterprise will not march ahead to solve its own problems, then let no one criticize, but let everyone applaud a government that has the courage and strength and vision to undertake the job.

He said the Government program goes beyond projects now contemplated and includes a campaign among large industries to induce them to bring their plants up to date, to replace obsolete machinery and equipment. This program obviously is the very heart of the problem of the durable goods problem and if the campaign proves effective will be of major importance. Nevertheless it runs counter to the feeling that normal revival in the durable goods industries is a matter of a year or so. The proposed campaign is said to have been discussed frequently of late between administration officials and industrial leaders.

#### Self-Liquidation Essential

"Everyone must realize," said Mr. Richberg, "that the only long-term answer to the problems of vast unemployment is the development of self-liquidating enterprises whereby money advanced will earn enough to cover interest and eventual repayment."

He declared that the Government cannot continue indefinitely to borrow money that does not earn any more than a private corporation can do this. Critics of Mr. Richberg say his sharp challenge to private capital and industry was a virtual admission that the Government had fallen down in

its program of vast undertakings which it had entered upon with great confidence as the new administration came into power.

Despite the fact that the Government is spending almost 250 per cent more than it did a year ago in financing construction, private activity has not been stimulated. This is one reason for loss of reliance on construction as a way to recovery. Likewise it consists of public works to the extent of 50 per cent.

## Roofing and Sheet Metal Contractors Seek to Amend Code—Other Developments

**W**ASHINGTON, Oct. 30.—Objections or suggestions concerning a group of proposed amendments to the roofing and sheet metal contracting code, as submitted by the divisional code authority, must be filed with Deputy Administrator Robert N. Campbell before Nov. 12.

The proposed amendments include: A proposal to exempt salesmen and canvassers working on a commission basis from the 40-hr., minimum wage provisions but assuring this class of employees a minimum rate of \$15 per week; a provision which would empower the code authority to elect new members to fill unexpired terms; a new sub-section providing for establishment of impartial survey bureaus for local districts to estimate quantities of materials required on projects for guidance of members who desire the service.

An addition to the fair trade practice section would prohibit members from quoting a price more than 2 per cent below that which would have been quoted had the member based his bid on the quantity estimate made by the approved survey bureau.

#### DIE CASTING

Suggestions or objections concerning a uniform cost accounting procedure submitted by the code authority for the die casting manufacturing industry must be submitted before Nov. 12 to Deputy Administrator W. W. Rose.

#### CULVERT PIPE

The NRA has announced the appointment of Alan Jay Parrish, of Paris, Ill., a member of the President's council for the construction industry as administration member of the code authority for the corrugated rolled-metal culvert pipe industry.

#### OXY-ACETYLENE INDUSTRY

The NRA has recognized the following as members of the supervising agency for the oxy-acetylene industry: W. C. Keeley and C. D'W. Gibson, Air Reduction Co., New York; George B. Walker, Line Air Products Co., New York; J. D. Swain, Union Carbide Sales Co., New York; J. H. Rodger, Oxweld, Rail-

It is, however, the principal undertaking in mind to relief unemployment as winter approaches. To this end the PWA is seeking to have construction speeded with funds it has already allotted and officials are compiling lists of projects which could be undertaken provided Congress grants the necessary additional money to PWA. No estimate of such funds has been given out, and may not be known, but it is clear it would run to a high total, well over \$1,000,000,000.

road Service Co., Chicago; Parker B. Francis, Puritan Compressed Gas Corp., Kansas City; D. J. Will, Stuart Oxygen Co., San Francisco; O. E. Engler, president, Balbach Co., Omaha; R. B. Swope, Southern Oxygen Co., South Washington, Va., and R. R. Dickson, president, Carbo-Oxygen Co., Pittsburgh.

#### HOSPITAL METAL FURNITURE

The NRA has announced approval of the code of fair competition for the metal hospital furniture manufacturing industry, employing normally about 2000 workers. The code provides for open price filing. It states that "when no declared emergency exists as to any given product there is to be no fixed minimum basis for prices." The Recovery Board is empowered to determine when an emergency exists and set minimum prices during the emergency. The code committee of the Association of Manufacturers of Metal Hospital Furniture is to constitute a temporary code authority, until a permanent authority of six members is elected at a meeting of the industry.

#### FORGED TOOL MANUFACTURING

Suggestions or objections concerning an application from the code authority for the forged tool manufacturing industry for termination of exemption from budget contributions of members whose main line of business is under some other code, must be submitted before Nov. 12 to Deputy Administrator H. Ferris White, Washington.

#### PRINTING EQUIPMENT

The code authority for the printing equipment industry and trade has submitted a method of value determination, and rules and regulations concerning trade-in allowances for used and second-hand machinery. Deputy Administrator Neal W. Foster has scheduled a public hearing Nov. 13 at Washington, to consider the proposals.

#### BOILER MANUFACTURING

The hearing scheduled for Oct. 31 on the provision in the code for the boiler manufacturing industry requiring members to file sales inquiries, quotations and orders with the code authority has been postponed until Nov. 7.

#### WHEEL AND RIM MANUFACTURING

A supplementary code for the wheel and rim manufacturing product group of the automotive parts and equipment manufacturing

industry has been approved. Acceptance of cancellation of orders without payment in full of the contract price on equipment finished prior to the notice of cancellation, or without payment of commitment charges covering cost of raw material and any labor burden involved in processing of partially-completed parts, is declared unfair practice. Placing of group products with any trade outlet on a consignment basis or on a floating credit or ledger balance basis is prohibited. Wilfully destructive price cutting is forbidden. Open price fixing is provided.

#### CODE AUTHORITIES NAMED

The NRA has announced the following code memberships:

**Vitreous Enamelled Ware Manufacturing Industry.**—W. F. Lewis, Lisk Mfg. Co., Canandaigua, N. Y.; Henry T. Bebb, Canton Stamping & Enameling Co., Canton; Ralph Fawcett, Republic Stamping & Enameling Co., Canton; and A. J. Kiekhefer, National Enameling & Stamping Co., Milwaukee.

**Household Ice Refrigerator Industry.**—W. F. Arndt, Duluth Refrigerator Co., Duluth, Minn.; M. O. McClellan, Rhinelander Refrigerator Corp., Rhinelander, Wis.; B. K. Miller, Sanitary Refrigerator Co., Fond du Lac, Wis.; C. C. Raoul, Tennessee Furniture Corp., Chattanooga, Tenn.; and E. R. Roll, of the Eau Claire Cold Storage Corp., Eau Claire, Wis.

**Marine Equipment Manufacturing Industry.**—Phelps Ingersoll, Wilcox Crittenden & Co., Middletown, Conn.; Donald S. Laughlin, Thomas Laughlin Co., Portland, Me.; Ernest Skoldberg, Atlantic-Pacific Mfg. Co., Brooklyn; Ralph H. Schmid, New York Boat Car Co., New York; Robert A. Patrick, Columbian Bronze Co., Freeport, L. I.; H. Geraldson, Nautical Lamps Co., Plainville, Conn.; W. H. Young, A. B. Sands Co., New York.

**Trailer Manufacturing Industry.**—J. Englaender, Trailer Company of America, Cincinnati; Harvey C. Fruehauf, Fruehauf Trailer Co., Inc., Detroit; J. W. Menhall, Highway Trailer Co., Edgerton, Wis.; E. Palmer, Kingham Trailer Co., Inc., Louisville, Ky.; and Robert Brodie, Owensboro Mfg. Co., Owensboro, Ky.

**Refrigeration Valves and Fittings Manufacturing Industry.**—J. S. Forbes, Kerotest Mfg. Co., Pittsburgh; F. C. Shafer, Imperial Brass Mfg. Co., Chicago; F. L. Riggan, Mueller Brass Co., Port Huron, Mich.; A. J. Weatherhead, Weatherhead Co., Cleveland; and A. J. Schulte, Bohn Aluminum & Brass Co., Detroit.

#### TRADE PRACTICE COMPLAINTS COMMITTEES NAMED

NRA has announced approval of organization and procedure of trade practice complaints committees for the following industries: **Washing and Ironing Machine Manufacturing Industry.**—Conditional approval of procedure plan. The six member code authority will constitute the committee.

**Porcelain Enamelling Manufacturing Industry.**—W. H. Brett, Enamel Products Co., Cleveland; R. G. Calton, Tennessee Enamel Mfg. Co., Nashville; Louis Ingram, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; Rudolf W. Staud, Porcelain Enamel Institute, Inc., Chicago, and H. H. Wineburgh, Textlite, Inc., New York.

**Secondary Aluminum Industry.**—W. M. Weil, National Smelting Co., Cleveland; W. A. McKnight, William F. Jobbins, Inc., Aurora, Ill.; D. K. Ewing, Aurora Refining Co., Aurora, Ill.; Administration member, Deputy Administrator W. A. Janssen, Washington; J. B. Neilman, Federated Metals Corp., Detroit; W. A. Singer, Apex Smelting Co., Chicago.

#### CODE BUDGETS

Objections or suggestions concerning code authority budgets for the following industries

must be filed with the administration prior to the dates indicated:

**Chain Manufacturing Industry.**—Combined budget total, \$29,578.16; from Feb. 10, 1934, to June 15, 1935. File objections before Nov. 15 with Deputy Administrator H. Ferris White, Room 510, 1518 K Street, N. W., Washington.

**Hoisting Engine Manufacturing Industry.**—Division of the Machinery and Allied Products

Industry. Budget total, \$4,500; from June 25, 1934, to June 15, 1935. File objections before Nov. 16 with Deputy Administrator Neal W. Foster, Room 539, Investment Building, 1511 K Street, N. W., Washington.

**Secondary Steel Products Warehousing Trade.**—Budget total, \$7,505; from Nov. 1, 1934, to Nov. 1, 1935. File objections before Nov. 15 with Deputy Administrator Frank H. Crockard, 1320 G Street, N. W., Washington.

## Steel Corporation Again Pays 1/2 Per Cent Dividend

**E**ARNINGS and income of the United States Steel Corp. for the quarter ended Sept. 30 amounted to \$3,768,863, and a 50-cent quarterly dividend on account of preferred stock was again voted at the board of directors meeting, New York, Oct. 30. The earnings were those after deducting all expenses, including ordinary repairs and maintenance, including also estimated Federal, State and local taxes (exclusive of charge for proportion of overhead expenses and taxes shown below) and reserves for contingencies, and including \$278,849 profits from sale of capital assets.

The deficit from operations after charges and allowances for depletion, depreciation and obsolescence of \$10,224,776, and interest charges for the quarter of \$1,256,258 was \$7,712,171. This was increased by \$2,114,596 by the proportion of overhead expenses (of which taxes alone are \$1,751,924) of the Lake Superior iron ore properties and Great Lakes transportation service, normally included in the value of the season's production of ore carried in inventories, but which because of curtailment in tonnage of ore to be mined and shipped in 1934 was not so applied. The dividend calls for \$1,801,405, and consequently the total deficit for the quarter, provided from undivided surplus, was \$11,628,172.

#### Sees Gradual Continued Betterment

Myron C. Taylor, chairman of the board, issued the following statement:

The reduced demand for steel which was indicated in our last quarterly statement has continued to this time. As a result, operations measured by finished product output dropped from 52.5 per cent of capacity in June to an average of 24 per cent for the third quarter. [They were 48 per cent for the second quarter.] During a part of October operations fell to 20 per cent. At present the rate is about 22 per cent with indications of gradual continued betterment.

Results as reported for the nine months in 1934 compared with 1933 show an increase in earnings before allowances for depreciation of \$18,500,000. The deficit in net earnings before dividends on preferred stock in 1934 was \$11,466,000 compared with a deficit of \$28,075,000 in the same period in 1933.

In the nine months of 1934 there were employed 194,000 employees as against 166,000 in the same period last year.

Total pay rolls for nine months of 1934 were \$163,925,000 compared with \$114,287,000 in 1933. The average earnings per employee per hour worked was this year 70 cents against 57 cents in 1933, an increase of 23 per cent.

The Corporation's position as to net working assets was slightly better at Sept. 30 than at June 30, and was about \$18,000,000 in excess of the net at Dec. 31, 1933.

## District Steel Operations

**S**TEEL ingot production has risen seven points to 37 per cent at Cleveland, two points to 30 per cent at Chicago, one point to 24 per cent in the Philadelphia district, three points to 27 per cent at Buffalo, two points to 30 per cent in the Wheeling district and 17 points to 25 per cent in the South. Valley operations are off two points to 22 per cent. Production elsewhere is substantially unchanged, Pittsburgh operations remaining at 18 per cent and the Detroit rate holding at 76 per cent.

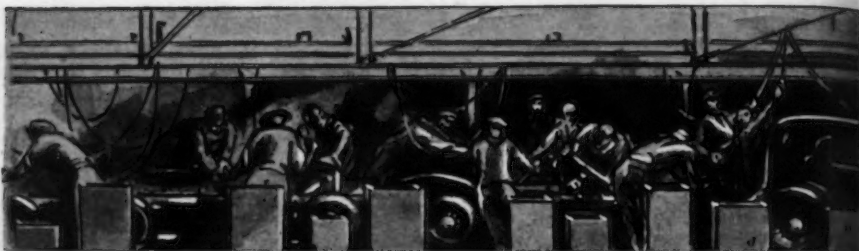
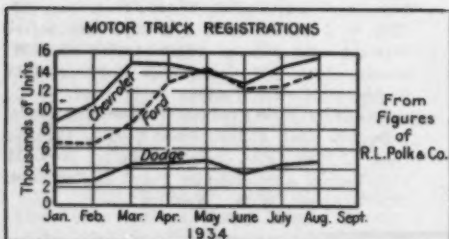
## Spring Wire Reduced \$6 a Ton

**T**HE following prices filed with the American Iron and Steel Institute and effective Nov. 4 represent a reduction of \$6 a ton:

|                                | Base Price<br>100 Lb. | Basing<br>Point  |
|--------------------------------|-----------------------|------------------|
| High-carbon<br>spring wire.... | \$2.90                | Pittsburgh       |
|                                | 2.90                  | Cleveland        |
|                                | 2.95                  | Chicago          |
|                                | 3.00                  | Worcester, Mass. |
|                                | 3.35                  | Pacific Ports    |

The ramifications of the numerous Government agencies both in Washington and throughout the country created to deal with the problems of the depression and with the new policies developed by the present Administration are described in a book just published by the Brookings Institution entitled "New Federal Organizations, An Outline of Their Structure and Functions," by Laurence F. Schmeckebier. The book enumerates 46 major organizations and numerous subsidiary corporations created or greatly enlarged in scope between March 4, 1933, and June 30, 1934.





## THIS WEEK ON THE

# Ford to Expand Production Facilities In Anticipation of Increased Sales

DETROIT, Oct. 30.

**I**N no uncertain manner the Ford Motor Co. has taken the center of the automotive stage. Exuding a confidence based on a spectacular comeback this year, it is preparing for bigger things in 1935. If industry in general hasn't a cheerful conception of what lies ahead for the American people, this feeling is not reflected at Dearborn where preparations are being made on a large scale to expand the productive capacity of the Rouge plant.

For practical purposes Rouge today is said to be able to manufacture 4800 units in 24 hr., working three 8-hr. shifts. Unless subsequently altered, the present program calls for increased facilities so that 4800 units can be made in 16 hr. Presumably the enlargement of capacity at Rouge will necessitate the placing of orders for new equipment and for the rebuilding of existing machinery. It is impossible at this time to estimate accurately the capital outlay for this purpose, but it is believed reasonably certain that Ford will expend more than \$2,000,000. It is understood that some of this business already has been allotted to machinery builders. Much of the revamping of present equipment to meet the new production needs will be done in Detroit, according to reliable reports.

It is thought that this expenditure, coming at a time when equipment makers are badly off for lack of work, will raise the total disbursements made by Ford in 1934 for new machinery, tools and dies to well over \$11,000,000, exclusive of the \$15,000,000 being invested in a new continuous sheet mill and other steel plant and power plant improvements.

It is believed that this gives the Ford Motor Co. the distinction of being the largest contributor this year toward revival of the capital goods industries and, ironically, having per-

formed this feat without benefit of NRA or of any other government agency. It means that Henry Ford, irreconcilable opponent of industrial regimentation, has not been content merely to voice criticism of the current trend in political economy, but has given a practical demonstration of what a vital economic force private business initiative can be.

It is no exaggeration to say that the Ford Motor Co., with its huge outlay this year in the form of wages and payment for materials and parts, plus its expenditures for capital improvements, has been the largest single industrial recovery agency at work in the United States.

Certain departments at Ford's Rouge plant already are making parts for the 1935 car and certain outside suppliers have received fairly substantial releases on parts orders. On the other hand, contracts have not yet been awarded for some parts and therefore production of them will not begin for another two weeks. Steel buying has been confined to small lots.

### Body Department Ready at Rouge

The new body department at the Rouge plant, where the V-eight Tudor bodies will be built, will start operations shortly. According to the present set-up, Ford will make the Tudor bodies, Briggs the four-door, Murray the coupe and Budd the commercial car and truck bodies. While there is no information available regarding the percentage of various body types sold by Ford, the industry as a whole in 1933 reported that 42 per cent of its total passenger-car production consisted of four-door sedans, 32 per cent of two-door sedans and 20 per cent of coupes.

Uncle Henry undoubtedly has his major competitors guessing. Much of the continued delay in tooling up for new models is attributable to a desire on the part of certain manufacturers

to wait and see what the new V-eight looks like. In the case of one company it is believed that it is making a change in the front-end appearance because it is forced into the position of having to offer something new in the next 60 days in order to appease its dealers. If public reception of the 1935 Ford is all that the high command at Dearborn anticipates, this maker may be forced to change its line again in the spring if it wishes to retain its competitive position.

### Packard Buys Gear Machinery

Aside from Ford, chief excitement at the moment is at the Packard plant. Having already spent over \$300,000 for a new cylinder block line for its proposed light car, Packard is contemplating other expenditures which may run as high as \$500,000. A number of gear finishing machines have been bought at a cost of over \$50,000, and other purchases of equipment for the manufacture of gears are pending. It still is possible that much of the equipment on which bids have been taken will not be ordered if existing machinery can be rebuilt for satisfactory performance.

Bodies for the new light Packard will be assembled in the Packard plant and many of the stampings made there. It is understood that Mullins Mfg. Co. has received a contract to produce the front fenders and Motors Metal Mfg. Co. a contract for the rear fenders. Budd will manufacture the doors. A few orders for steel for die tryout purposes have been placed. The initial volume buying of steel by Packard for its new car probably will occur in the next month and will be for 15,000 jobs. The tentative production program specifies the assembly of 3000 cars during January. It is reported that hand-made models will be built for display at the New York show.

Chevrolet is continuing to assemble



# ASSEMBLY LINE

1934 models, with Master series and trucks in the preponderance. Its gray iron foundry has gone down for the change-over period and for inventory taking, closing about a month later than usual. It should begin casting cylinder blocks and other parts for 1935 models around Nov. 15.

## No Tooling Programs for Three G. M. Divisions

It is significant that no tool and die programs for new cars have come out of three General Motors divisions—Buick, Oldsmobile and Cadillac-LaSalle. Neither Buick nor Cadillac-LaSalle is contemplating a year-end change. Oldsmobile is reported to be making only slight alterations in its present line for 1935. It is possible, of course, that a new program may develop later, after Oldsmobile discovers how its sales are likely to be affected by the new Pontiac six.

Buick originally is believed to have planned on holding to its present line of cars until July of 1935, but preliminary work is said to have started on a new body design and a new engine for a car probably to be introduced in April. If an equipment buying program should be necessary, it will not be ready for two months or longer.

Reo, having progressed as far as the blue-print stage with a new engine which would involve purchase of considerable new machinery, apparently has decided to continue with its present engine through at least the early months of next year. Reo has concluded an agreement with Mack-International whereby the latter will sell and service Reo Speedwagons and trucks in 12 cities throughout the country. This merchandising hook-up of Reo, in the light truck field, and Mack, in the heavy-duty truck field, is expected to be beneficial to both organizations.

## Hayes to Make Hupp Bodies

Hupp, under the management of its newly-appointed executive vice-president, Rufus Cole, is reported to have decided to abandon its body plant at Cleveland and purchase at least part of its bodies from Hayes Body Corp. at Grand Rapids. Hayes is said to be

## By BURNHAM FINNEY

Detroit Editor, THE IRON AGE

ready to turn out bodies also for the De Vaux Six-Sixty-Six to be built on the Pacific Coast.

Dodge is understood to have run through about 30 of its 1935 cars in the last week. It should be starting production on a volume basis about the middle of November and probably will be ready for a December announcement. The front-end treatment of the new Dodge is said to resemble closely that of the LaSalle.

It is reliably reported that the all-steel roof to be adopted by Chevrolet the coming year also will be used by other General Motors divisions. Other companies are investigating closely its merits and it would not be surprising if it should find favor throughout most of the industry in 1936.

## Ford of Canada to Build Electric Furnace Foundry

Ford of Canada has announced that it will construct an electric furnace foundry adjoining its East Windsor, Ont., plant, where crankshafts will be cast for the V-eight Canadian-built cars. This will be the first major expenditure of Ford of Canada for new construction work since the early days of the depression.

Federal Motor Truck Co. is said to be on the verge of a tool and die program for a new light truck which it will bring out early in 1935. Truck manufacture is continuing to receive impetus from Federal Government orders, further business having been placed in the last week with Dodge Truck, Federal and Chevrolet.

October is closing with total output for the month estimated at 125,000 units. November assemblies probably will not exceed 70,000 units, although it is difficult to gage the future operations of most companies because of uncertainty regarding how soon they can snap into volume production of new models. Retail stocks are not be-

ing liquidated so rapidly as manufacturers had hoped for, but by the time that new model announcements are made the number of 1934 cars still in the field should not average more than three or four to a dealer.

Hupmobile is understood to be negotiating with Citroen of France for rights to build in this country a low-price front-drive car. If an agreement should be reached, it is possible that body stampings temporarily would be imported from France until duplicate dies could be manufactured. Last spring Citroen introduced a 7-hp. car with the engine clutch and transmission all ahead of the dash, forming a compact unit. Power is transmitted directly to the front wheels by short shafts with special universal joints. The car has no chassis, the one-piece steel body designed by Budd forming the structural elements carrying the weight of the car.

Hupp dealers are expected to reject the proposed agreement whereby they would market Willys-Overland cars slightly altered in design from the present models. Electric Auto-Lite Co. has been awarded a contract for all ignition equipment for the new light Packard. E. H. Reed, Auto-Lite's general purchasing agent, has been made director of purchases for the company and its affiliated concerns operating a total of 17 plants. Logan Gear Co. has received contracts from Pontiac and Chrysler.

## Steel Releases Gain

Automotive steel releases have increased in volume during the past 10 days and many steel mills are closing October with bookings substantially better than in September which, of course, was a very light month.

Prospects are good for a broadening of steel demand in the next two weeks. During that period Chevrolet probably will place orders for sheets, strip and bars for its sheet metal operations at Flint and for its local gear and axle plant, covering 50,000 to 60,000 jobs. Ford is buying some steel as parts specifications are approved.

Plymouth is said to have encountered a delay of two weeks in getting started, so that its total assemblies in November are likely to be small.



## PERSONALS

K. C. GARDNER, vice-president in charge of machinery sales for the United Engineering & Foundry Co., Pittsburgh, has had his duties extended to include sales of all of the company's products, with the title of vice-president in charge of sales. HORACE MAGER, who has been in the company's roll sales department, now has supervision over the roll and steel casting sales division.

J. R. T. CRAINE, head of the chemical and analytical section of the General Electric Co., Pittsfield, Mass., laboratory, has been selected to establish a laboratory at the Rio de Janeiro works of the company. He will complete his work at the Pittsfield plant Nov. 16, and sail about March 1, next, to take up his new work.

ALFRED RANTSCH has been elected vice-president and manager of Pressure Castings, Inc., Cleveland manufacturer of die castings. He was engineering sales manager of the Doehler Die Casting Co. of Toledo for 16 years and manager of Barnhart Brothers & Spindler, Chicago, four years.

J. J. BYRNE, who has been connected with the Cleveland sales office of the Empire Sheet & Tin Plate Co., Mansfield, Ohio, has been appointed Cleveland district sales representative for that company succeeding GLENN D. EAST, who recently resigned.

THOMAS A. PEARSON, vice-president of Fred T. Ley & Co., will take over the duties of chairman of the Springfield, Mass., better housing committee on Nov. 1.

FRED B. SMITH recently completed 50 years of association with the Hendey Machine Co., Torrington, Conn. He started work with the company as an apprentice, became a machinist and subsequently a foreman of the shaper department. He later joined the sales staff of the company.

HENRY D. BEVAN, former assistant manager of the New York office of the Terry Steam Turbine Co., Hartford, Conn., has been made manager of the Philadelphia district office, at 1109 Otis Building.

HILAND G. BATCHELLER, president of the Ludlum Steel Co., Watervliet, N. Y., has been elected a director of the New York State National Bank, Albany, one of the oldest banks in the country.

DARWIN S. LUNTZ, of the Luntz Iron & Steel Co., Canton, has been elected president of the Canton Chamber of Commerce. Mr. Luntz, who has been active in the business, industrial and civic affairs of his community for years, is a member of the board of directors of the Institute of Scrap Iron and Steel.

sequently he went to the Donora plant in the same capacity, advanced to superintendent at Rankin and later held the same position at the Braddock plant, from which he went to the Sheet & Tube company in 1909. Since that time he virtually built the present rod and wire mill plant at Struthers, which is regarded as one of the most modern wire mills in the country.

NELS P. FLODIN, for the past 15 years sales manager of the Lake Shore Engine Works, Marquette, Mich., died after a long illness at his home at that city on Oct. 16. He was born in Sweden, May 30, 1863, and came to this country 50 years ago. For six years he was employed at Duluth and in 1890 went to Marquette to begin his career with the Lake Shore company.

CHARLES T. LEHMAN, president of the Lehman Machinery Co., Birmingham, machinery distributor, died on Oct. 23.

J. P. ORUM, superintendent of the Bessemer, Ala., rolling mills of the Tennessee Coal, Iron & Railroad Co., died Oct. 25, after an operation. Mr. Orum had been connected with the Bessemer rolling mills since 1913, when he went there as assistant superintendent. He became superintendent in 1926. Prior to going to the Birmingham district, he was with the National Tube Co. and his service with the Steel Corporation dates back nearly 40 years.

## Steel Furniture Orders In September

WASHINGTON, Oct. 30.—New orders for business steel furniture in September totaled \$812,665 compared with \$869,512 in August, according to the Bureau of the Census. In the first nine months of the current year new orders aggregated \$8,776,119 against \$5,410,262 in the corresponding period of last year.

September orders for shelving steel furniture were valued at \$208,867 compared with \$206,308 in August and in the first nine months of 1934 orders totaled \$2,484,006 against \$1,407,282 in the corresponding period of last year.

## September Fabricated Steel Plate Down

WASHINGTON, Oct. 30.—Orders for fabricated steel plate in September dropped to 15,108 tons from 16,293 tons in August, according to the Bureau of the Census. For the first nine months of the current year orders were 182,757 tons against 152,909 tons in the corresponding period of last year.

## OBITUARY

FRANK H. NULLMEYER, for more than 25 years superintendent of the rod and wire plant of the Youngstown Sheet & Tube Co. at Struthers, Ohio, died suddenly Oct. 20, aged 60 years. Born at Homestead, Pa., he attended the public schools until the age of 15, when he became a plumber's apprentice. Later he obtained his first steel mill experience in the cold-rolling department of the Jones & Laughlin Steel Corp. While working in the mills he studied mechanical drawing at night school. He obtained an engineering education by taking a course in mechanical engineering and chemistry in correspondence schools. His first engineering job was as a draftsman with the Shoenberger Steel Co., Pittsburgh, in 1899, and he was chief draftsman of this company when it was absorbed by the United States Steel Corp. the following year. Later he became assistant chief engineer of the Pittsburgh district,

and in 1903 he became assistant superintendent of the Rankin Mill of the American Steel & Wire Co. Sub-



F. H. NULLMEYER

## SUMMARY OF THIS WEEK'S BUSINESS

# Steel Production Rises One and One-Half Points to 26 Per Cent

### Heavier Automotive Business Is Main Contributing Factor to Enlarged Operations—Scrap Index in Further Advance

**I**NCREASED steel production, heavier pig iron shipments, enlarged demand from the automobile industry and a further strengthening of scrap prices have given the iron and steel market added buoyancy.

Ingot output has advanced one and one-half points to 26 per cent of capacity, the highest rate since the first week in August. The sharpest gain in any producing center was registered in the Cleveland-Lorain district, where production rose seven points to 37 per cent. In that area most of the improvement is attributable to larger releases from motor car makers, although part of it is ascribable to orders from miscellaneous consumers for stock. At Chicago, heavier bookings have come not only from automotive sources but also from farm equipment makers, who continue to expand their operations in anticipation of a heavy spring demand.

**P**IG IRON shipments have shown a gain in most markets but have increased most in the Great Lakes area, where the October movement exceeded that of September by 50 to 70 per cent. At Chicago, foundry coke shipments in October were the largest since March. St. Louis has also experienced an appreciable gain in melt, this being especially true of stove plants, whose operations are 30 per cent ahead of what they were a year ago.

Scrap, as measured by THE IRON AGE composite price for heavy melting steel, has advanced from \$9.58 to \$9.63 a ton, reflecting an increase in the Philadelphia district. While the other constituents of the index, the Chicago and Pittsburgh prices, remain unchanged, at Detroit heavy melting scrap is up 25c. a ton and other grades 25c. to 50c.

**F**INISHED steel orders from the motor car industry are still individually small, although bulking fairly large in the aggregate. It is customary when manufacturers are starting production on new models to place initial orders cautiously so that they can make size changes later if necessary. Prospects are good for a further broadening of steel demand in the next two weeks. During that period Chevrolet will place orders for sheets, strip and bars for its sheet metal operations at Flint and for its Detroit gear and axle

plant covering 50,000 to 60,000 jobs. Ford is buying steel as parts specifications are approved. Plymouth has encountered a delay and its November assemblies are likely to be small.

Total automobile output in November will probably not exceed 70,000 units, as against about 125,000 in October. The speed with which new model production gets under way will depend in part on whether the reopening of the automobile code, which expires Nov. 3, ushers in new labor difficulties.

**N**EW construction is tapering. PWA allotments for public works are now practically completed and no new funds are immediately available. Structural awards of 7900 tons are the lowest since the last week of September. October lettings, at 54,230 tons, compare with 41,780 tons in September and 69,680 tons in August.

The Norfolk & Western will buy 10,000 tons of rails with its own funds. While it is understood that the Government is prepared to offer attractive interest rates on loans for rail purchases, the plans of most carriers are still indefinite. The recent court decision on the railway pension act is regarded as encouraging, because that legislation abruptly halted railroad requisitions for all but the bare necessities.

Inquiry from the oil industry has improved and an Eastern company has placed an order for tanks calling for 1000 tons of plates. However, pending line pipe projects varying in size from small feeder units to large jobs are being postponed because of price. Pipe mills, however, are in no position to lower quotations with volume at its present low levels.

**I**RON and steel exports in September, at 301,330 tons, were the largest of the year. Scrap alone accounted for 225,212 tons. American mills are figuring on a Russian inquiry for 3800 tons of sheets. Approximately 100,000 metric tons of finished steel products will be bought by Japan to alleviate the shortage caused by the suspension of mills in districts swept by the recent typhoon.

High-carbon spring wire has been reduced \$6 a ton. THE IRON AGE composites for finished steel and pig iron are unchanged at 2.124c. a lb. and \$17.90 a ton.



# ▲ ▲ ▲ A Comparison of Prices ▲ ▲ ▲

Market Prices at Date, and One Week, One Month, and One Year Previous  
Advances Over Past Week in Heavy Type, Declines in Italics

| Pig Iron   | Oct. 30,<br>1934 | Oct. 23,<br>1934 | Oct. 2,<br>1934 | Oct. 31,<br>1933 |
|--|------------------|------------------|-----------------|------------------|
| <i>Per Gross Ton:</i>  |                  |                  |                 |                  |
| No. 2 fdy., Philadelphia.....  | \$20.26          | \$20.26          | \$20.26         | \$18.26          |
| No. 2, Valley furnace.....   | 18.50            | 18.50            | 18.50           | 17.50            |
| No. 2 Southern, Cin'ti.....  | 19.13            | 19.13            | 19.13           | 18.13            |
| No. 2, Birmingham.....   | 14.50            | 14.50            | 14.50           | 13.50            |
| No. 2 foundry, Chicago*.....   | 18.50            | 18.50            | 18.50           | 17.50            |
| Basic, del'd eastern Pa.....   | 19.76            | 19.76            | 19.76           | 17.76            |
| Basic, Valley furnace.....   | 18.00            | 18.00            | 18.00           | 17.00            |
| Valley Bessemer, del'd P'gh..  | 20.76            | 20.76            | 20.76           | 19.76            |
| Malleable, Chicago*.....   | 18.50            | 18.50            | 18.50           | 17.50            |
| Malleable, Valley.....   | 18.50            | 18.50            | 18.50           | 17.50            |
| L. S. charcoal, Chicago.....   | 24.04            | 24.04            | 24.04           | 23.54            |
| Ferromanganese, seab'd car-<br>lots .....  | 85.00            | 85.00            | 85.00           | 82.00            |
| †This quotation is for delivery in South; in the North prices<br>are 38c. a ton under delivered quotations from nearest Northern<br>furnace. |                  |                  |                 |                  |
| *The switching charge for delivery to foundries in the Chi-<br>cago district is 60c. per ton.  |                  |                  |                 |                  |

## Rails, Billets, etc.

|                                |             |             |             |         |
|--------------------------------|-------------|-------------|-------------|---------|
| <i>Per Gross Ton:</i>          |             |             |             |         |
| Rails, heavy, at mill.....     | \$36.37 1/2 | \$36.37 1/2 | \$36.37 1/2 | \$37.75 |
| Light rails, Pittsburgh.....   | 35.00       | 35.00       | 35.00       | 32.00   |
| Rerolling billets, Pittsburgh. | 27.00       | 27.00       | 27.00       | 26.00   |
| Sheet bars, Pittsburgh.....    | 28.00       | 28.00       | 28.00       | 26.00   |
| Slabs, Pittsburgh.....         | 27.00       | 27.00       | 27.00       | 26.00   |
| Forging billets, Pittsburgh... | 32.00       | 32.00       | 32.00       | 31.00   |
| Wire rods, Pittsburgh.....     | 38.00       | 38.00       | 38.00       | 35.00   |
|                                | Cents       | Cents       | Cents       | Cents   |
| Skelp, grvd. steel, P'gh, lb.. | 1.70        | 1.70        | 1.70        | 1.60    |

## Finished Steel

|                                 |          |          |          |          |
|---------------------------------|----------|----------|----------|----------|
| <i>Per Lb.:</i>                 | Cents    | Cents    | Cents    | Cents    |
| Bars, Pittsburgh.....           | 1.80     | 1.80     | 1.80     | 1.75     |
| Bars, Chicago.....              | 1.85     | 1.85     | 1.85     | 1.80     |
| Bars, Cleveland.....            | 1.85     | 1.85     | 1.85     | 1.80     |
| Bars, New York.....             | 2.13     | 2.13     | 2.13     | 2.08     |
| Plates, Pittsburgh.....         | 1.80     | 1.80     | 1.80     | 1.70     |
| Plates, Chicago.....            | 1.85     | 1.85     | 1.85     | 1.75     |
| Plates, New York.....           | 2.08     | 2.08     | 2.08     | 1.98     |
| Structural shapes, Pittsburgh   | 1.80     | 1.80     | 1.80     | 1.70     |
| Structural shapes, Chicago..    | 1.85     | 1.85     | 1.85     | 1.75     |
| Structural shapes, New York     | 2.05 1/4 | 2.05 1/4 | 2.05 1/4 | 1.95 1/4 |
| Cold-finished bars, Pittsburgh  | 2.10     | 2.10     | 2.10     | 1.95     |
| Hot-rolled strips, Pittsburgh.  | 1.85     | 1.85     | 1.85     | 1.75     |
| Cold-rolled strips, Pittsburgh. | 2.60     | 2.60     | 2.60     | 2.40     |

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables. †Blue Eagle copper.

## Finished Steel

|  |                  |                  |                 |                  |
|--|------------------|------------------|-----------------|------------------|
| <i>Per Lb.:</i>  | Oct. 30,<br>1934 | Oct. 23,<br>1934 | Oct. 2,<br>1934 | Oct. 31,<br>1933 |
|  | Cents            | Cents            | Cents           | Cents            |
| Hot-rolled annealed sheets,<br>No. 24, Pittsburgh..... | 2.40             | 2.40             | 2.40            | 2.25             |
| Hot-rolled annealed sheets,<br>No. 24, Gary.....       | 2.50             | 2.50             | 2.50            | 2.35             |
| Sheets, galv., No. 24, P'gh..                          | 3.10             | 3.10             | 3.10            | 2.85             |
| Sheets, galv., No. 24, Gary...                         | 3.20             | 3.20             | 3.20            | 2.95             |
| Hot-rolled sheets, No. 10, P'gh                        | 1.85             | 1.85             | 1.85            | 1.75             |
| Hot-rolled sheets, No. 10 Gary                         | 1.95             | 1.95             | 1.95            | 1.85             |
| Wire nails, Pittsburgh.....                            | 2.60             | 2.60             | 2.60            | 2.10             |
| Wire nails, Chicago dist. mill                         | 2.65             | 2.65             | 2.65            | 2.15             |
| Plain wire, Pittsburgh.....                            | 2.30             | 2.30             | 2.30            | 2.10             |
| Plain wire, Chicago dist. mill                         | 2.35             | 2.35             | 2.35            | 2.15             |
| Barbed wire, galv., P'gh....                           | 3.00             | 3.00             | 3.00            | 2.60             |
| Barbed wire, galv., Chicago<br>dist. mill.....         | 3.05             | 3.05             | 3.05            | 2.65             |
| Tin plate, 100 lb. box, P'gh.                          | \$5.25           | \$5.25           | \$5.25          | \$4.65           |

## Scrap

|                                |         |         |         |         |
|--------------------------------|---------|---------|---------|---------|
| <i>Per Gross Ton:</i>          |         |         |         |         |
| Heavy melting steel, P'gh....  | \$10.50 | \$10.50 | \$10.25 | \$11.75 |
| Heavy melting steel, Phila...  | 9.63    | 9.50    | 9.50    | 10.00   |
| Heavy melting steel, Ch'go...  | 8.75    | 8.75    | 8.75    | 8.75    |
| Carwheels, Chicago.....        | 9.50    | 9.50    | 9.50    | 9.50    |
| Carwheels, Philadelphia.....   | 10.50   | 10.25   | 11.25   | 11.75   |
| No. 1 cast, Pittsburgh.....    | 11.25   | 11.25   | 11.25   | 11.75   |
| No. 1 cast, Philadelphia.....  | 10.75   | 10.75   | 11.75   | 11.50   |
| No. 1 cast, Ch'go (net ton)... | 8.00    | 8.00    | 8.00    | 9.00    |
| No. 1 RR. wrot, Phila.....     | 11.25   | 11.25   | 11.25   | 11.00   |
| No. 1 RR. wrot, Ch'go (net)... | 7.00    | 7.00    | 7.00    | 7.75    |

## Coke, Connellsville

|                             |        |        |        |        |
|-----------------------------|--------|--------|--------|--------|
| <i>Per Net Ton at Oven:</i> |        |        |        |        |
| Furnace coke, prompt.....   | \$3.85 | \$3.85 | \$3.85 | \$3.75 |
| Foundry coke, prompt.....   | 4.60   | 4.60   | 4.60   | 4.25   |

## Metals

|                                 |          |          |          |       |
|---------------------------------|----------|----------|----------|-------|
| <i>Per Lb. to Large Buyers:</i> | Cents    | Cents    | Cents    | Cents |
| Electrolytic copper, refinery†. | 8.75     | 8.75     | 8.75     | 8.00  |
| Lake copper, New York†....      | 9.12 1/2 | 9.12 1/2 | 9.12 1/2 | 8.25  |
| Tin (Straits), New York....     | 51.35    | 51.25    | 50.95    | 49.00 |
| Zinc, East St. Louis.....       | 3.85     | 3.85     | 3.90     | 4.75  |
| Zinc, New York.....             | 4.20     | 4.20     | 4.25     | 5.10  |
| Lead, St. Louis.....            | 3.55     | 3.55     | 3.45     | 4.15  |
| Lead, New York.....             | 3.70     | 3.70     | 3.60     | 4.30  |
| Antimony (Asiatic), N. Y...     | 9.75     | 9.50     | 8.87 1/2 | 6.70  |

# ▲ ▲ ▲ The Iron Age Composite Prices ▲ ▲ ▲

## Finished Steel

|               |               |
|---------------|---------------|
| Oct. 30, 1934 | 2.124c. a Lb. |
| One week ago  | 2.124c.       |
| One month ago | 2.124c.       |
| One year ago  | 2.003c.       |

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output.

|            | HIGH              | LOW               |
|------------|-------------------|-------------------|
| 1934 ..... | 2.199c., April 24 | 2.008c., Jan. 2   |
| 1933 ..... | 2.015c., Oct. 3   | 1.867c., April 18 |
| 1932 ..... | 1.977c., Oct. 4   | 1.926c., Feb. 2   |
| 1931 ..... | 2.037c., Jan. 13  | 1.945c., Dec. 29  |
| 1930 ..... | 2.273c., Jan. 7   | 2.018c., Dec. 9   |
| 1929 ..... | 2.317c., April 2  | 2.273c., Oct. 29  |
| 1928 ..... | 2.286c., Dec. 11  | 2.217c., July 17  |
| 1927 ..... | 2.402c., Jan. 4   | 2.212c., Nov. 1   |

## Pig Iron

|                     |
|---------------------|
| \$17.90 a Gross Ton |
| 17.90               |
| 17.90               |
| 16.61               |

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

| HIGH         |     | LOW           |    |
|--------------|-----|---------------|----|
| \$17.90, May | 1:  | \$16.90, Jan. | 27 |
| 16.90, Dec.  | 5:  | 13.56, Jan.   | 3  |
| 14.81, Jan.  | 5:  | 13.56, Dec.   | 6  |
| 15.90, Jan.  | 6:  | 14.79, Dec.   | 15 |
| 18.21, Jan.  | 7:  | 15.90, Dec.   | 16 |
| 18.71, May   | 14: | 18.21, Dec.   | 17 |
| 18.59, Nov.  | 27: | 17.04, July   | 24 |
| 19.71, Jan.  | 4:  | 17.54, Nov.   | 1  |

## Steel Scrap

|                    |
|--------------------|
| \$9.63 a Gross Ton |
| 9.58               |
| 9.50               |
| 10.17              |

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

| HIGH          |      | LOW           |    |
|---------------|------|---------------|----|
| \$13.00, Mar. | 13 : | \$9.50, Sept. | 25 |
| 12.25, Aug.   | 8 :  | 6.75, Jan.    | 3  |
| 8.50, Jan.    | 12 : | 6.42, July    | 5  |
| 11.33, Jan.   | 6 :  | 8.50, Dec.    | 29 |
| 15.00, Feb.   | 18 : | 11.25, Dec.   | 9  |
| 17.58, Jan.   | 29 : | 14.08, Dec.   | 3  |
| 16.50, Dec.   | 31 : | 13.08, July   | 2  |
| 15.25, Jan.   | 11 : | 13.08, Nov.   | 22 |

# Bookings Show Little Improvement at Pittsburgh



**Local Operations Are Unchanged While Valley Output Dips to 22 Per Cent—Wheeling District Rate Up Two Points**

**P**ITTSBURGH, Oct. 30.—Finished steel orders in this district still fail to show any marked improvement. Automotive buying has not yet developed and gains in miscellaneous specifications are scarcely noticeable. Sentiment continues to be fairly good, particularly when compared with the general state of mind during August and September.

The October business of some of the smaller companies in this district has been as much as 24 per cent ahead of September, but the larger mills generally report smaller gains. On some products such as bars, plates, shapes and pipe scarcely any change in demand has been reported this month, while tin plate business has been definitely under September levels. Improvement has been most marked in the case of sheets, strip steel and wire products.

The Norfolk & Western is in the market for 10,000 tons of rails, but this is the only buying from the carriers which is even in prospect. A Government-financed rail and equipment buying program is still talked about, but local mills are not informed as to its probable size and time. Fabricated structural steel awards are lighter, reflecting the decline in new public works projects. The farm implement business is taking slightly more steel, but Pittsburgh district mills are not benefiting to any large extent. Jobber buying is still comparatively light.

Steel ingot production in the Pittsburgh district is unchanged at 18 per cent of capacity. In most cases the smaller independent companies are operating at a better rate than the leading interests. Production in the Wheeling area is up two points to 30 per cent of capacity, while output in the Valleys and nearby northern Ohio mills averages only about 22 per cent.

## Pig Iron

In the absence of sizable transactions in basic iron, the market continues very quiet. Large basic users in the district have been melting a large percentage of scrap in their furnaces in recent months, and this tendency is likely to continue as long as the wide disparity in pig iron and scrap prices remains. The same situation is true

to some extent in the case of foundries, although most of them are operating at such low levels that their melting requirements are negligible. No definite business has yet developed on the strength of the new type of braking equipment to be installed on freight cars over the next five years, but sizable pig iron purchases are inevitable under the program. Only one merchant furnace is operating in this district and the Valleys.

## Semi-Finished Steel

The market is very quiet with tin plate operations tending to decline and sheet and strip mills barely holding their own. Shipments of billets, slabs and sheet bars in October have been slightly heavier than in September.

## Rails and Track Accessories

The Norfolk & Western will take Clayton Act bids on Nov. 14 on 10,000 tons of 131-lb. rails. This is the first sizable rail inquiry which has been before the trade in some time, and this road will use its own funds to make the purchase. It is also indicated that this tonnage is not to be applied on 1935 requirements which have not yet been made known. No definite information is available regarding the prospects of a PWA-financed rail buying program. It is believed that the Government is prepared to offer attractive interest rates on loans for this purpose, but the carriers are reluctant to commit themselves. Their requests for higher freight rates may be acted upon favorably by the Interstate Commerce Commission, but until a definite decision is reached the carriers are not well able to estimate their income.

## Bars

This market shows little change, with demand confined entirely to small lots. Consumers are not disposed to place contracts for future commitments, and the principal outlets are all rather quiet. Little automotive tonnage is developing, although alloy steel bars are reported to be in slightly better demand from this source. The reinforcing steel bar market continues fairly active, with road

work outstanding. Bids on one of the contracts in connection with the Fort Peck dam have been thrown out and new tenders will be asked. This project requires 12,000 tons of reinforcing bars.

## Cold Finished Steel Bars

The market is still awaiting improved demand from the automotive industry. Small orders for completion of this year's models are still coming in, but the tonnage involved is very light. Agricultural implement makers are fairly active, but are not contributing much to activity in this district. Jobbers are doing little or no buying.

## Bolts, Nuts and Rivets

The bolt and nut market is apparently stabilized on a basis of 70, 10, 10 and 10 off list. No change has been made on rivets, with the large size quoted at 2.90c. a lb., Pittsburgh or Cleveland, and small rivets at 70 and 5 per cent off list. The market is very quiet with demand coming from miscellaneous sources, and no particular activity among the larger consuming industries.

## Plates and Shapes

Structural steel awards have been light in the last week and little new inquiry is appearing. PWA allotments for public works projects are now practically completed and no new funds are immediately available. This condition is already being reflected in the structural steel market as private projects have failed to appear. Fabricating shops in this district are engaged at about 50 per cent of capacity, and have sufficient work on their books to carry them beyond the first of the year. Plates are very dull. Scarcely any railroad demand is reported, and the oil industry is taking little steel for tankage purposes. Plate awards by the Navy Department early next month will probably benefit Pittsburgh district mills to some extent.

## Tubular Products

A number of line pipe projects varying in size from small feeder units to large jobs are attracting interest, but none of them seem to have reached the actual inquiry stage. Oil companies object to the present price of pipe, but producers are in no position to lower quotations with demand at such low levels. The gasoline price war now going on will unquestionably affect oil company purchases, unless immediate settlement is reached. Standard pipe is slightly more active than it was a month ago, but the benefits of the Federal housing program are slow to be realized in this district.

## Wire Products

Demand for merchant wire products from the South and West is fairly well sustained, but jobbers' stocks in



that territory are ample to meet current demands in a normally dull season. The situation may improve considerably in the spring as farmer buying power in those regions has been definitely raised. Manufacturers' wire is very quiet and reinforcing mesh is moving fairly well on highway contracts.

#### Sheets

Significant buying by the automobile industry is still delayed and mills expect little pronounced activity before the middle of November. At that time substantial tonnages are likely to be placed for initial production of 1935 models. Sheet demand from other sources is well sustained but shows no tendency to expand. Stove manufacturers have passed the peak of their season, and refrigerator makers are no longer active. Electrical sheets are moving in fair volume to makers of small motors. Sheet production in this district ranges from 20 to 25 per cent of capacity. New differential and extra cards have been issued on wrought iron hot-rolled and wrought iron galvanized sheets. Changes apply largely to size extras.

#### Tin Plate

Production continues at about 40 per cent of capacity, although the current tendency is toward further curtailment in operation. The leading interest is running at a slightly higher rate, but some of the large independents are operating on a very restricted basis. No definite information regarding the next year's price is yet available, and the opinion persists that no change will be made.

#### Strip Steel

In the absence of substantial automotive demand this market continues rather quiet. Mill operations are intermittent and much of the tonnage coming out is placed with the producer who happens to be operating and can make the best delivery.

#### Coal and Coke

Domestic demand has failed to appear in sizable volume, although recent colder weather has reduced dealers' stocks considerably. The furnace coke market is very quiet and low foundry operations in the district are not stimulating demand for coke of this grade.

#### Scrap

Following small purchases of No. 1 heavy melting steel by several small consumers two weeks ago, the market in the past week has been practically devoid of transactions. Recent purchases brought out slightly higher prices and also removed all distress material from the market. Under the circumstances a stronger tone prevails today, although a sharp upward movement in quotations can hardly be expected until steel production in the district rises at least 10 points. The other grades of scrap are unchanged with prices largely nominal.

## Heavy Scrap Exports From New England

**B**OSTON, Oct. 30.—The local export scrap market continues active. Some 14,000 tons of old rails, automobile and miscellaneous scrap are scheduled to be loaded within the next week or 10 days. One lot of 5000 tons is leaving this week for Scotland, a steamer is due here today to take 5000 tons for Poland, and another boat is due Nov. 1 to take 4000 tons, also for Poland, after which she will proceed to Providence, R. I., to load better than 2000 tons. A shipment of 6400 tons of scrap left Boston for Italy Oct. 27. Despite the advance in No. 1 heavy melting steel prices at Pittsburgh, the price is far out of line with those paid here for export material. Activities at the American Steel & Wire Co., Worcester, Mass., plant have been slightly extended, and some of the other large New England scrap consumers are doing better, but not sufficiently so to bring them into the market for material. Chemical interests are still holding up shipping instructions on borings.

Another quiet week has passed in the pig iron market. In spots foundries are melting more, and some buying is expected in November. B. F. Sturtevant Co., Boston, has received an order for fuel economizers from the American Gas & Electric Co., which calls for 500 tons of castings. The Gilbert & Barker Mfg. Co., Springfield, Mass., foundry has reemployed workers following a long period of quietness, and other large industrial plants anticipate increasing working forces within the near future. Jobbing foundries generally, however, still have little work on their books.

## California Election Affects Coast Trade

**S**AN FRANCISCO, Oct. 29.—Current inactivity in the steel market is attributed by many to pre-election influences which in California are attracting nationwide attention. Encouraging to the trade, however, has been a greater volume of jobbing business than was anticipated during the summer. The stabilizing of oil practices is stimulating the opening and developing of new fields in southern California. An increasing demand for steel pipe, casing and drill steel has been noted in this territory.

With the placing of the general contract for the San Francisco Psychopathic building it is reported that 825 tons of structural steel has been placed with Judson-Pacific Co., while Gunn-Carle Co. took 184 tons of reinforcing bars. Pacific Car & Foundry Co. has been awarded 1400 tons of structural steel by J. H. Pomeroy &

Co., low bidder for the Columbia River bridge near Grand Coulee dam in Washington.

New projects listed during the week were limited. Long Beach, Cal., will take bids soon on canal retaining walls which call for 1400 tons of reinforcing bars. The Rye Patch dam, to be located near Lovelock, Nev., will require 350 tons of reinforcing bars, 250 tons of sheet piling, 183 tons of gates and metal work and 81 tons of liner plates. Bids go in Nov. 12 and the material will be purchased later by the Bureau of Reclamation. Despite rumors that the motion picture industry may leave California, Warner Brothers-First National Studios are building four sound stages which call for 450 tons of structural steel.

With new highway programs to be announced soon, the trade looks for greater activity toward the close of the quarter.

## Stove Plants Active In St. Louis Area

**S**T. LOUIS, Oct. 30.—Operations in the stove plants here and in the Belleville district continue heavy, averaging about five days a week, as compared with two to three days weekly between Aug. 15 and Sept. 15. It is estimated that operations are approximately 30 per cent ahead of this time last year. The plants are working only on orders, most of them from mail order houses. The melt at plants catering to the agricultural implement industry is also heavy, the business being much greater than had been expected in view of the drouth of last summer. Manufacturers of household appliances, principally washing machines, also report a heavy volume of orders. Both sales and shipments of pig iron during October were said to be considerably ahead of September.

Trade in finished iron and steel continues quiet, but stocks of all lines in hands of warehouses and fabricators are said to be at a low ebb, and buying is expected shortly. The Missouri Highway Commission will open bids Friday for highway bridges requiring 624 tons of structural steel. Bids will be opened Nov. 7 for a highway bridge in McIntosh County, Okla., requiring 467 tons of structural steel.

Although the scrap trade is slow, prices are holding firm. With prices in Chicago and Pittsburgh looking up, dealers here feel that it will be only a matter of a few weeks when mills will show interest in the market. It is said that Colorado and Kansas City mills have been taking some scrap from this territory, as have exports, so that there is no surplus in this market. Missouri-Kansas-Texas Railway has a list of 3500 tons of scrap.

# Chicago Rate Rises Two Points to 30 Per Cent



**Automobile and Farm Implement Industries Are Taking More Steel—Spring Wire Prices Are Reduced \$6 a Ton**

**C**HICAGO, Oct. 30.—The better feeling that has been in evidence for the last 10 days or two weeks is now being translated into steel mill tonnage and a heavier demand for pig iron. Chicago mills have gained two points and are now operating at 30 per cent of ingot capacity. If producers' plans carry through, several additional open-hearth furnaces will be added before the week is past.

The upward swing in demand remains largely in the sheet market and emanates from automobile manufacturers. However, farm implement makers are not lagging and their optimism fully matches that of the automobile trade.

Consumer pressure against prices is more severe and it is bringing results, as shown by the filing of new spring wire quotations that are \$6 a ton below current prices. The impression is growing that this may be the beginning of a move that will be of far-reaching importance.

The success of the railroads in winning in the lower court the battle to forestall imposition of a heavy pension burden is distinctly an encouraging factor. It was this legislation that brought to an abrupt end railroad requisitions for all but bare necessities.

## Pig Iron

Shipments of Northern iron in October will top September by at least 50 per cent and new specifications point to a still larger movement. Chrysler and Ford are accepting shipments against parts orders for new models and most Michigan foundries are working over parts blue prints. The local producers have taken one furnace out of blast. There is now only one merchant stack blowing.

## Coke

October foundry coke shipments are fully 20 per cent better than in September, thereby making the current month the best of the year with the exception of March. Current prices are being carried forward for deliveries during November.

## Reinforcing Bars

Of outstanding interest is the announcement from Milwaukee that the

long awaited plans for its filter plant, requiring 4000 tons of reinforcing bars, will be out this week. The Sanitary District, Chicago, has ordered 275 tons and will take bids on an additional 115 tons. Otherwise the market is very drab and both inquiries and lettings are confined to scattered and small lots. The Illinois road and bridge program is quiet, though sellers feel assured numerous bridges will be built during the winter.

## Cast Iron Pipe

Activity has eased off sharply under seasonal influences that will mark the end of regular pipe laying in Northern States in about a month. It is expected, however, that filter plant construction and the like will continue through the winter months. Chicago has not yet ordered its 320 tons of 36-in. pipe. The slowness of this award results from the fact the pipe will not be used before next spring. Lake Forest, Ill., has ordered 175 tons and six contractors' jobs in southern Illinois will take close to 2000 tons.

## Wire Products

New prices for spring wire have been filed at \$6 a ton below current quotations, which stand at \$3.20 per 100 lb. This change comes at a time when the furniture trade is doing better and just prior to an expected buying movement by automobile manufacturers. In some respects it can be looked upon as the sellers' answer to consumers' objections not alone to the old base price but also to the new extras.

This week's gain in business, which was small, has come almost entirely from automobile manufacturers. Wire mills are still wondering what became of all the money put into farmers' hands by the Government and they look for no further help from rural districts until next spring. Jobbers are now approaching the inventory season and in all probability will take little in the way of wire products until after the turn of the year.

## Sheets

Hot mills in this district have raised output to about 45 per cent of capacity, which makes them the most active of any of the local rolling units. Sellers

believe their position is well secured for some time to come. Demand for automobile sheets, they believe, is destined to expand, and there is a better tone to miscellaneous business. On the other hand, jobbers are keeping a close eye on inventories and will in all probability take nothing more than fill-in tonnages until after the turn of the year.

## Rails

Although not of moment in the local market, the announcement that the Norfolk & Western is in the market for 10,000 tons of 131-lb. rails is encouraging to the Chicago trade. There is no real activity in Chicago, though the general impression has spread that the Santa Fe and the Burlington are potential buyers. With both rail mills down, the next important question is when buying and releases will actually take place. As matters now stand it appears that mills will not get relief until late in the year, and it may come as late as the early months of 1935.

## Structural Material

Practically all the news in this market centers in bridge programs that are being undertaken in the Mississippi River valley and West. In addition to this bridge work, there is the perennial subject of dams across the Mississippi River. A second dam at Winona, Minn., seems to have been sidetracked, and it is now announced that the Muscatine, Iowa, dam, No. 16, will be out for figures this week and that bids will be opened Nov. 27. This project will take 2500 tons of structural shapes and 1280 tons of reinforcing bars.

## Plates

Miscellaneous orders for tanks call for 600 tons of plates. Otherwise the market remains quiet except that there will be attractive plate work in connection with the Muscatine and Winona dams. The railroad market holds little of interest for the reason that present attention is being given to experimental high-speed units.

## Bars

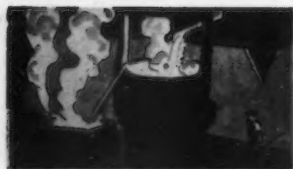
Although no material gain in releases is noticeable, there is a distinct note of optimism among sellers who are counting on good support from automobile centers. There is better demand for tillage machinery, and farm implement manufacturers are preparing for still better manufacturing programs. Miscellaneous demand remains steady and without feature.

## Scrap

The local scrap market is moving on an even keel with factors of strength predominating over the few signs of weakness. Dealers are still paying top prices for railroad scrap, which is being offered freely by the carriers. In fact, this week's offerings of heavy melting steel and scrap rails total 7500 tons.



# Philadelphia Operations Rise One Point to 24 Per Cent



**Pig Iron Deliveries Continue in Heavier Volume Than a Month Ago—Scrap is Developing a Stronger Tone**

**P**HILADELPHIA, Oct. 30.—Steel ingot output in this area has risen one point to 24 per cent of capacity. At Pencoyd a small and a large structural mill are in operation, but rolling schedules in other plants in this district are unaltered from previous weeks.

Steel turnover continues to suffer from the failure of railroads, shipbuilders and auto body plants to enter new orders. The railroads have sufficient cars to take care of present loadings, and it is reported that a good portion of the rail tonnage purchased earlier in the year has not been laid. However, the trade believes that considerable repair activity is being purposely withheld to further the petition for higher rates. The Norfolk & Western is inquiring for 10,000 tons of 131-lb. rails as well as 4000 kegs of spikes for immediate delivery.

Automobile body and parts makers are only taking occasional tonnages against refill orders for old models and for tryouts of new dies. It is expected that demands from this quarter will have expanded materially by early December if the production of new models materializes according to expectations.

Local private shipbuilders have about completed purchasing against the Navy vessels now being built. However, steel sellers here are looking to Washington with considerable hopefulness, for on Nov. 2 the Navy will open bids on the steel for 13 vessels to be built in its own yards. One drawback to this kind of work is that specifications are released over such a long period that the tonnage is merely an addition to the routine business of the successful bidders.

## Pig Iron

New business continues to be limited to carlots for immediate melting. This demand is diverse, with no particular industry prominently active, although foundry units of stove and furnace makers are enjoying a moderate seasonal spurt. Shipments on contracts and new business in this area are definitely heavier than a month ago, being about 3500 to 4500 tons monthly for all grades, both

domestic and foreign. There is still no definite sentiment regarding first quarter prices other than a belief that no advances will be filed. There is a possibility, however, that if permission is given to advance freight rates a firmer tone for iron may develop.

## Bars, Plates and Shapes

There is only a light miscellaneous demand for plates in the absence of large projects. The demand for structural steel has declined considerably, although a fair tonnage is going into machinery, boiler and tank work. Bar distributors are purchasing in fair volume, but the requirements for highway work are spotty and of small size. The R. J. Reed Construction Co. is expected to purchase about 140 tons of reinforcing within a fortnight for a highway project at Fayetteville, N. C. Bids go in this week for 1300 tons of shapes for a bridge at Leechburg, Pa., but the Navy Yard at Philadelphia has postponed the letting of 900 tons for an engine testing building. The location is to be changed and new tenders will probably be entered within 30 days. On Nov. 2 the Navy will open bids on the steel for two cruisers, three submarines and eight destroyers, involving about 18,000 tons of plates, shapes and bars. A number of these ships will be built in the Philadelphia area.

## Sheets

Several radio makers, the stove industry and steel cabinet fabricators are taking routine small tonnages. Otherwise there is little in the way of strips or sheets moving in this territory. For the future, the sellers here look to better activity of automobile stamping plants to result in some improvement in demand. Their requirements will probably be spread over November and December, as all automobile makers are not changing models at the same time.

## Imports

Imports received at Philadelphia last week consisted of only 683 tons of pig iron from British India.

## Scrap

The reappearance of some domestic business and the sentimental influence of a stronger tone at Pittsburgh have definitely changed the complexion of this market. A consumer has purchased No. 1 and No. 2 steel in lots of over 1000 tons at \$10 and \$8.75 a ton respectively. In addition, a broker purchase of 2000 tons of desirable No. 1 ship scrap has been made at a price in line with these figures. However, general broker purchases of No. 1 and No. 2 steel for export are still being made at \$9.25 and \$8.25 respectively. The recent broker purchases of No. 2 steel at Phoenixville, Pa., were made at prices as high as \$7.75. This price was mistakenly quoted at \$8.75 last week. At Baltimore and Washington a mill is still securing a little No. 1 and No. 2 from a number of dealers at \$8.50 and \$7.50 a ton respectively. The steel is naturally not plentiful at these levels, as exporters are offering at least 25 points higher for similar material.

## Sheet Demand Subsides At Cincinnati

**C**INCINNATI, Oct. 30.—Demand for sheets has subsided to about 40 per cent of mill capacity. The reaction was largely in orders from the automobile industry, whose new model program has not reached a level requiring heavier ordering. Bookings, the past week, were well distributed, with domestic appliance manufacturers still prominent.

Recent improvement in pig iron demand has been maintained, although the melt has shown no appreciable gain. Bookings, however, are still in small quantities. Stove foundries are supplying the bulk of current foundry operations, although jobbing plants are doing a fair volume of work.

Mill acceptances of scrap are limited to sheet clippings and a few unimportant items on old contracts. New business is nil. Yard supplies are fairly substantial, but frozen.

As a part of its plant modernization program, the Columbia Steel Co., Pittsburg, Cal., a subsidiary of the United States Steel Corp., recently completed the installation of electrical crane and hoist equipment to speed production. A new method employs hoists for block stripping in the wire mill and utilizes 17 P. & H.-Milwaukee hoists. They are P. & H. type R-¼ equipped with Cleveland Tramrail trolleys. With but one 220 volt motor, and equipped with rigid arm push button control, these hoists have a capacity of 600 lb. and a lifting speed of 34 ft. per min.

# Output Rises Seven Points To 37 Per Cent at Cleveland



**Gain Is Due Mainly to Growing Needs of  
Automotive Industry — Some Buying for  
Stock Makes Its Appearance**

**C**LEVELAND, Oct. 30. — Demand for finished steel shows a definite although moderate improvement. The ingot output in the Cleveland-Lorain territory this week gained seven points to 37 per cent of capacity, through the starting up of three open-hearth furnaces by the Corrigan, McKinney Steel Co., and is now higher than at any time since June.

The increase is due mostly to new demand from the automotive industry for sheets and bars. Several of the automobile manufacturers during the week bought steel for early shipment for production of new models. While none of the orders was large, in the aggregate they represented a fair tonnage and resulted in a stepping up of operations by several sheet mills this week. The automobile tonnage was distributed among a number of producers.

Miscellaneous orders for finished steel also showed some improvement. Most consumers continue to order in small lots as needed. However, some orders were placed for steel for stock. It had been many weeks since there had been any reports of buying for stock.

Outside of the automotive field there is little to indicate an early increase in consumption of steel, although some of the refrigerator manufacturers are planning to start production shortly on new models which will be built for stock.

Some thought is already being given to first quarter prices and the opinion is quite general that there will be no price changes except possibly some revision of sheet extras.

## **Pig Iron**

The improvement in the demand is being maintained, although the volume is still small. Consumers are adhering to the policy of buying in small lots as needed. The largest sale reported during the week was a 300-ton lot. October sales and shipments by a leading producer will be from 60 to 70 per cent greater than in September.

## **Sheets**

Demand from the automotive industry took an upturn during the week. Several motor car manufacturers and

the Fisher Body Corp. placed small quantities for prompt shipment. It is customary for manufacturers when they start production of new models to place only small initial orders, as they may find that size changes are desirable. Some fresh business in automobile parts has been placed and has slightly stimulated orders from parts and manufacturers in this territory. Some of the electric refrigerator manufacturers are ordering sheets for new models on which they are starting production. Demand from stove and washing machine manufacturers is holding up fairly well.

## **Strip**

Demand gained slightly the past week. Some small-lot business came from the automotive industry and miscellaneous orders improved. Cold rolling strip plants are now releasing some orders for hot strip.

## **Iron Ore**

Shipments of Lake Superior ore for October are expected to aggregate slightly under 2,500,000 tons and the November movement is estimated at 300,000 to 400,000 tons, making the total movement of the season approximately 22,000,000 tons as compared with 21,672,410 tons last year.

## **Reinforcing Bars**

Bids for the first three dams for the Muskingum watershed conservancy district will be taken by the United States Engineer's office, Zanesville, Ohio, Nov. 13, 15 and 21. These will require 300 tons of reinforcing bars, which will be purchased directly by the Government. New billet steel bars are to be specified. The Lorain Avenue bridge, Cleveland, will take 230 tons of bars, and a Pike County highway bridge, 160 tons.

## **Bars, Plates and Shapes**

Orders for these products show a moderate increase. Some fresh bar tonnage has come from the automotive and accessory industries, but forge shops in this territory have not yet benefited by any new business in automobile forgings. Plans for the Lorain Avenue bridge, Cleveland, for

which bids will be taken Nov. 16, have been sent out by the State highway department and indicate that this job will take 3050 tons of shapes or somewhat more than expected. A Toledo factory building, taking 250 tons, has been placed.

## **Bolts, Nuts and Rivets**

Bolt and nut prices appear to have been stabilized by the recent price reduction to 70, 10, 10 and 10 per cent off list. Some automobile companies have inquiries out for their 1935 requirements. Business in October will show a slight gain over September. Rivet prices are unchanged.

## **Scrap**

The supply of scrap available at the prices that have been quoted recently has become rather scarce, and this has resulted in a slightly firmer tone, although quotations are unchanged. Activity is still confined to small-lot purchases by dealers to fill outstanding orders with Youngstown district mills. Cleveland steel plants still have ample stocks and new purchases by these plants this year are regarded as improbable.

## **Steel Rate Slightly Higher at Buffalo**

**B**UFFALO, Oct. 30.—The Lackawanna plant of the Bethlehem Steel Corp., is now operating six open-hearth furnaces, an increase of one. Republic Steel Corp. continues with three and Wickwire-Spencer Corp. with one. The Seneca sheet division of the Bethlehem Steel Corp. is running at about 20 per cent.

The Erie County bridge program of six bridges, totaling about 300 tons of structural steel, is advertised for bidding Nov. 13. This is a program which has been in contemplation for a year and has been consistently postponed. The new Kensington High School will require 300 tons of reinforcing material, partly rail steel and partly new billet material.

The pig iron market has a slightly better tone. The demand, though small, seems to cover a wide area and is consistent. Temporarily the Lackawanna plant of Bethlehem has two blast furnaces active, but this represents a changeover, and the stack originally active will be retired from blast shortly.

The scrap market is quiet, with a few sales of No. 1 machinery cast scrap and stove plate. Outside markets appear to be a little stronger, according to local dealers. One reason for this is the recent purchasing of the American Radiator Co. and the Ford Motor Co.



# Steel Demand Shows No Further Gain at New York



**But Orders Are More Numerous—Local Contractor Gets Tygart Valley Job—Soviet Inquires for 3800 Tons of Sheets**

**N**EW YORK, Oct. 30.—Steel bookings have shown no further gain in the aggregate but are increasingly numerous. In some instances orders are being received from buyers who hadn't been heard from for two to three years. While this clearly indicates that consumers are reaching the end of their stocks, it is likely that their purchases will be mainly of the fill-in sort until after year-end inventories are taken.

Government work continues to loom large as a source of tonnage. The Frederick Snare Corp., New York, has been awarded the general contract for the Tygart River dam, Grafton, W. Va., which will require 1400 tons of bars, 400 tons of structural shapes and 1600 tons of piling. Inquiries for small, private structural jobs are increasing, and oil companies are taking greater interest in the market. The Colonial Beacon Oil Co., Albany, N. Y., has awarded six storage tanks, calling for 1000 tons of plates, to the Chicago Bridge & Iron Works.

Some of the eastern railroads are reopening their shops at intervals for general repairs, but there are as yet few indications of the inauguration of broad equipment and rail programs. An exception is an inquiry for 10,000 tons of 131-lb. rails from the Norfolk & Western.

The Soviet Government is in the market for 3800 tons of hot and cold rolled sheets. It is understood that inspection at point of delivery and 24 months' credit are among the conditions of the inquiry.

## Pig Iron

Fresh buying is wholly of a fill-in nature, and deliveries on old contracts are keeping up to schedule. Business suffered somewhat last week because of the foundrymen's convention at Philadelphia. As a consequence, new commitments for the seven-day period amounted to only 1400 tons, as compared with 2000 tons in the previous period and 1850 tons two weeks earlier.

## Reinforcing Steel

Building mesh has been reduced and road mesh advanced so that both

are at the same level. They are now priced an average of \$1 a ton higher at 1c. to 1.50c. a square yard depending on delivery points. The actual freight charges from Pittsburgh are now being used instead of the previous method of zoning charges. Both mesh and bars are in lighter demand as highway requirements taper off. Truscon Steel Co. will furnish 550 tons for highway work in Morris County, N. J. Pending projects consist of miscellaneous work in Pennsylvania and about 200 tons to be let by Connecticut on Nov. 5.

## Scrap

Buying continues in sizable volume for export at prices unchanged from last week. A boat is now loading No. 1 steel for Japan, and barge accumulations of both No. 1 and No. 2 steels are being made for ships expected in. A firmer tone for important grades has developed in eastern Pennsylvania, but so far no definite reaction has appeared in this district.

## Steel Production Up In South

**B**IRMINGHAM, Oct. 30.—The pig iron market remains sluggish. Most of the current business is on a spot basis and none of the furnaces has much forward tonnage. A majority of the foundries are buying iron only as needed.

Since Oct. 18, when Republic Steel blew out a furnace, there has been four blast furnaces in operation. Last week all four were on foundry iron. This week the Tennessee company's lone active stack, which was temporarily on foundry iron, has been changed back to basic.

The steel situation is also not very encouraging, although last week sheet demand experienced a moderate improvement and there was some new tonnage in bars, plates and shapes. Wire products continue to lag.

Open-hearth operations last week were down to two units, as a result of shutdown of the Fairfield open-hearth plant of the Tennessee company. Pro-

duction was resumed at Fairfield on Saturday and the active total is now back to six.

Pressure pipe tonnage is holding up fairly well, as a result of more frequent PWA releases and awards. Most of these range from 150 to 250 tons. November promises to maintain the present rate.

## Cast Iron Pipe

Beverly-Salem, Mass., has awarded 150 tons of 24 and 30-in. to United States Pipe & Foundry Co.

Natic, Mass., has awarded 125 tons to R. D. Wood & Co.

Trappe, Md., asks bids until Nov. 8 for 2000 ft. of 6-in. for water supply. Kastenhuber & Anderson, Stewart Building, Easton, Md., are consulting engineers.

Bentonville, Ark., will soon take bids for pipe for water system extensions and for other waterworks equipment. Fund of \$60,000 has been arranged. Black & Veatch, Mutual Building, Kansas City, Mo., are consulting engineers.

Dawson, Tex., will ask bids early in December for pipe for water system; also for pumping machinery and other waterworks equipment. Fund of \$54,000 has been arranged through Federal aid. A. F. Mitchell, Corsicana, Tex., is consulting engineer.

Kalispell, Mont., plans early purchase of pipe for extensions in water system. A. L. Saunders is city engineer.

Englewood, Colo., closes bids Nov. 13 for pipe for water mains; also for deep well pumping equipment, Diesel engines, elevated steel tank, etc.

Sewerage and Water Board, 526 Carondelet Street, New Orleans, asks bids until Dec. 27 for various sizes of pipe for water system extensions (Schedule 201-W); until Jan. 10, 1935, for another quantity for same purpose (Schedule 203-W). Fund of \$2,500,000 has been authorized for extensions and improvements in water and sewerage systems.

Fort Smith, Ark., plans about 23 miles of 27-in. for trunk lines for water system. W. R. Holway, 302 East Eighteenth Street, Tulsa, Okla., is consulting engineer.

Pecos, Tex., plans 95,000 ft. of 2 to 10-in. for water supply; also pumping machinery and accessories, 10,000-gal. tank and other waterworks equipment. B. G. Warner is engineer. Fund of \$300,000 has been arranged.

Jackson Center, Ohio, plans pipe lines for water system. Fund of \$42,000 is being arranged for this and other waterworks installation. Edison Ellis, 1158 Hazel Avenue, Lima, Ohio, is consulting engineer.

City of Bland, Mo., will soon call for bids for 15,900 ft. of 2 to 8-in. for a waterworks system; also for one 50,000-gal. tank and tower, to be financed by \$44,500 PWA loan. George E. Wells, Inc., St. Louis, is engineer.

Lake Forest, Ill., has awarded 175 tons to James B. Clow & Sons.

Hilbert, Wis., has plans for fire protection system requiring 5000 lin. ft. of 6 and 8-in.

Adams, Wis., will hold special election Nov. 20 on \$110,000 bond issue for municipal waterworks plant. PWA funds have been allotted.

Wisconsin State Board of Control, Madison, closes bids Nov. 13 on furnishing and laying 12,040 lin. ft. of 10-in. at State Hospital for Mental Diseases.

Huntington Park, Cal., will take bids Nov. 5 on 170 tons of 8 and 12-in.

Spanish Fork City, Nev., took bids Oct. 29 for improvements to waterworks system, involving an unstated tonnage of pipe.

# Fabricated Structural Steel

## Lettings Decline—New Projects in Fair Volume

**A**WARDS of 7900 tons are the lowest since the last week in September and compare with 14,100 tons a week ago. The latter tonnage does not include 8000 tons reported as awarded for a parcel post building in Boston. Bids for this project exceeded appropriations and new tenders will probably be asked. The outstanding award for the week is 3000 tons for a cold-rolled strip mill at Youngstown for the Youngstown Sheet & Tube Co. New projects of 14,650 tons are only slightly in excess of 14,500 tons last week and 14,302 tons two weeks ago. Two new jobs of 2500 tons each are for a bridge at Monroe and Alexander, La., and for dam No. 16 in the Mississippi River at Muscatine, Iowa. Plate lettings total 1000 tons. Structural steel contracts in October, at 54,230 tons, compare with 41,780 tons in September and 69,680 tons in August. Structural steel awards for the week follow:

### FABRICATED STRUCTURAL STEEL AWARDS

#### NORTH ATLANTIC STATES

Worcester, Mass., 100 tons, hospital, to United Structural Steel Co., Worcester.

Hampton, N. J., 235 tons, highway bridge, to Phoenix Bridge Co.

#### SOUTH AND SOUTHWEST

Nashville, Tenn., 110 tons, viaduct beams, to Nashville Bridge Co.

Harlan County, Ky., 170 tons, beam and girder spans, to Midland Structural Steel Co.

Pike County, Ky., 215 tons, bridge, to R. C. Mahon Co.

Columbia, S. C., 270 tons, addition to Kress store, to Ingalls Iron Works.

Sevier County, Ark., 160 tons, bridge, to Virginia Bridge & Iron Co.

Donaldson, Ark., 200 tons, bridge, to Arkansas Foundry Co., Little Rock, Ark.

Franklin County, Ark., 215 tons, bridge, to St. Louis Structural Steel Co.

McCurtain County, Okla., 130 tons, bridge, to Capital Steel & Iron Co.

Ottawa and Osage Counties, Okla., 1220 tons, bridges, to J. B. Klein Iron & Foundry Co.

Chama, N. M., 300 tons, tunnel and bridge, to American Bridge Co.

#### CENTRAL STATES

Youngstown, Ohio, 3000 tons, cold rolled strip mill building for Youngstown Sheet & Tube Co., to Fort Pitt Bridge Works Co.

Youngstown, 150 tons, building for Isaly Dairy Co., to Truscon Steel Co.

Oxford, Ohio, 180 tons, dormitory for Miami University, to Truscon Steel Co.

Toledo, Ohio, 250 tons, factory building for E. I. duPont de Nemours, to McClintic-Marshall Corp.

River Rouge, Mich., 175 tons, gas washer plant, to Arthur G. McKee Co.

Iowa City, Iowa, 100 tons, building, to Iowa Steel & Iron Works.

State of Illinois, 100 tons, bridge, to Illinois Steel Bridge Co.

Chicago Heights, Ill., 225 tons, bridge, to McClintic-Marshall Corp.

Milwaukee, 125 tons, Shorewood High School auditorium, to William F. Eichfeld & Sons Co., Milwaukee.

Oregon County, Mo., 145 tons, bridge, to St. Louis Structural Steel Co.

St. Louis, 210 tons, Hampton Avenue viaduct, to Mississippi Valley Structural Steel Co.

Douglas County, Neb., 265 tons, highway bridge, to Omaha Steel Co.

#### WESTERN STATES

San Francisco, 825 tons, psychopathic building, to Judson-Pacific Co.

Long Beach, Cal., 140 tons, alterations to Polytechnic High School, to Pacific Iron & Steel Co.

Almira, Wash., 1400 tons, Columbia River highway bridge near Grand Coulee Dam, to Pacific Car & Foundry Co.

#### NEW STRUCTURAL STEEL PROJECTS

##### NORTH ATLANTIC STATES

Boston, Mass., 8000 tons, parcel post building; American Bridge Co. reported last week as successful bidder; bids exceeded appropriations and new tenders will probably be asked.

Bordentown, N. J., 640 tons, jail buildings; bids in.

New York, 410 tons, laboratory for Willard Parker Hospital.

State of New York, 760 tons, three highway bridges.

Erie County, 500 tons, highway bridges; bids Nov. 13.

##### SOUTH AND SOUTHWEST

Carthage, Tenn., 740 tons, bridge.

Grafton, W. Va., 400 tons of structural shapes and 1600 tons of sheet steel piling for Tygart River dam; general contract awarded to Frederick Snare Corp., 114 Liberty Street, New York.

Sheffield, Ala., 950 tons, gate frames for Wheeler Dam for Tennessee Valley Authority.

Monroe and Alexander, La., 2500 tons, bridges.

State of Oklahoma, 467 tons, highway bridge in McIntosh County; bids close Nov. 7.

##### CENTRAL STATES

Cleveland, 3050 tons, Lorain Avenue bridge; bids Nov. 16.

Gallipolis, Ohio, 1660 tons, Government dam; bids to U. S. Engineers, Huntington, W. Va., Nov. 20.

Toledo, 190 tons, bridge for Toledo Terminal Railway.

Muscatine, Iowa, 2500 tons, dam No. 16 across Mississippi River.

Springfield, Ill., 200 tons, bridge.

Chicago, 175 tons, repairs to elevated railway.

State of Missouri, 625 tons, three bridges.

Melvern, Kan., 425 tons, bridge.

Clay Center, Kan., 350 tons, bridge.

##### WESTERN STATES

Colorado Springs, Colo., 600 tons, bridge.

Fremont County, Colo., 105 tons, State highway structure; bids Nov. 7.

Hollywood, Cal., 450 tons, four sound stages for Warner Brothers-First National Studios; bids, soon.

### FABRICATED PLATE

#### AWARDS

Albany, N. Y., 1000 tons, six storage tanks for Colonial Beacon Oil Co., to Chicago Bridge & Iron Works.

#### NEW PROJECTS

Vernon, Cal., 140 tons, city storage tank, Pacific Coast Steel Corp. low bidder.

## Manufacturing Activity Down in September

**T**HE general improvement in manufacturing activity usually seasonal in September did not occur last month, according to the regular monthly survey of the National Industrial Conference Board. Instead, there were declines of 5.7 per cent in number of wage-earners employed, of 6.1 per cent in total man-hours worked, and of 5.8 per cent in payrolls disbursed. In addition, the rise in the cost of living from August to September depressed real weekly earnings of wage-earners 2.1 per cent.

The reduction in the number of wage-earners employed was due not only to the textile strike but also to curtailment in the automobile, foundry, heavy equipment, rubber, paint and varnish, iron and steel, and paper products industries.

Unemployed workers numbered 9,976,000 in September, 1934, according to the preliminary estimate of the National Industrial Conference Board. This is an increase of 177,000 over August, and 1,037,000 over the low point of 8,939,000 in May, 1934.

To manufacture airplanes which are a combination of airplane and automobile, the Cornelius Aircraft Corp., Ltd., has been organized with headquarters in Los Angeles. According to G. Wilbur Cornelius, president, 315 West Ninth Street, Los Angeles, (Room 501), the planes will have modern safety devices, such as a parachute for the entire airplane, automatic landing arrangement and also "spinless and stallless proof characteristics which will render the plane automatic in flight." The company plans to farm out the building of parts and assemble them in its own plant. It will not purchase equipment at the present time.

The A. O. Smith Corp., Milwaukee, manufacturer of steel automobile frames, welded steel pipe, etc., is establishing new department for production of pressed steel sections for house and dwelling construction, material to be fabricated in standard sizes at plant and welded together at building site.



# Prices of Finished Steel and Iron Products

## BARS, PLATES, SHAPES

| Iron and Steel Bars            |       |
|--------------------------------|-------|
| Soft Steel Base per Lb.        |       |
| F.o.b. Pittsburgh              | 1.80c |
| F.o.b. Chicago                 | 1.85c |
| F.o.b. Gary                    | 1.85c |
| F.o.b. Duluth                  | 1.95c |
| Del'd Detroit                  | 1.95c |
| F.o.b. Cleveland               | 1.85c |
| F.o.b. Buffalo                 | 1.90c |
| Del'd Philadelphia             | 2.00c |
| Del'd New York                 | 2.10c |
| F.o.b. Birmingham              | 1.95c |
| F.o.b. cars dock Gulf ports    | 2.20c |
| F.o.b. cars dock Pacific ports | 2.35c |

| Rail Steel                     |       |
|--------------------------------|-------|
| (For merchant trade)           |       |
| F.o.b. Pittsburgh              | 1.70c |
| F.o.b. Chicago                 | 1.75c |
| F.o.b. Gary                    | 1.75c |
| F.o.b. Moline, Ill.            | 1.75c |
| F.o.b. Cleveland               | 1.75c |
| F.o.b. Buffalo                 | 1.80c |
| F.o.b. Birmingham              | 1.85c |
| F.o.b. cars dock Gulf ports    | 2.10c |
| F.o.b. cars dock Pacific ports | 2.25c |

| Billet Steel Reinforcing                     |       |
|--|-------|
| (Straight lengths as quoted by distributors) |       |
| F.o.b. Pittsburgh                            | 2.05c |
| F.o.b. Chicago                               | 2.10c |
| F.o.b. Gary                                  | 2.10c |
| Del'd Detroit                                | 2.20c |
| F.o.b. Cleveland                             | 2.10c |
| F.o.b. Youngstown                            | 2.10c |
| F.o.b. Buffalo                               | 2.10c |
| F.o.b. Birmingham                            | 2.10c |
| F.o.b. cars dock Gulf ports                  | 2.20c |
| F.o.b. cars dock Pacific ports               | 2.45c |

| Rail Steel Reinforcing                       |       |
|--|-------|
| (Straight lengths as quoted by distributors) |       |
| F.o.b. Pittsburgh                            | 1.90c |
| F.o.b. Chicago                               | 1.95c |
| F.o.b. Gary                                  | 1.95c |
| F.o.b. Cleveland                             | 1.95c |
| F.o.b. Youngstown                            | 1.95c |
| F.o.b. Buffalo                               | 1.95c |
| F.o.b. Birmingham                            | 1.95c |
| F.o.b. cars dock Gulf ports                  | 2.30c |
| F.o.b. cars dock Pacific ports               | 2.30c |

| Iron                     |       |
|--------------------------|-------|
| F.o.b. Chicago           | 1.80c |
| F.o.b. Terre Haute, Ind. | 1.75c |
| F.o.b. Louisville, Ky.   | 2.10c |
| F.o.b. Danville, Pa.     | 2.00c |
| F.o.b. Berwick, Pa.      | 1.80c |

| Cold Finished Bars and Shafting* |       |
|----------------------------------|-------|
| Base per Lb.                     |       |
| F.o.b. Pittsburgh                | 2.10c |
| F.o.b. Chicago                   | 2.15c |
| F.o.b. Gary                      | 2.15c |
| F.o.b. Cleveland                 | 2.15c |
| F.o.b. Buffalo                   | 2.20c |
| Del'd Detroit                    | 2.20c |
| Del'd eastern Michigan           | 2.30c |

\* In quantities of 10,000 to 10,000 lb.

| Fence and Sign Posts           |         |
|--------------------------------|---------|
| Angle Line Posts               |         |
| Base per Net Ton               |         |
| F.o.b. Pittsburgh              | \$50.00 |
| F.o.b. Chicago                 | 50.00   |
| F.o.b. Duluth                  | 51.00   |
| F.o.b. Cleveland               | 50.00   |
| F.o.b. Birmingham              | 53.00   |
| F.o.b. Houston                 | 59.00   |
| F.o.b. cars dock Pacific ports | 68.00   |

| Plates                            |       |
|-----------------------------------|-------|
| Base per Lb.                      |       |
| F.o.b. Pittsburgh                 | 1.80c |
| F.o.b. Chicago                    | 1.85c |
| F.o.b. Gary                       | 1.85c |
| F.o.b. Cleveland                  | 1.95c |
| F.o.b. Coatesville                | 1.90c |
| F.o.b. Sparrows Point             | 1.90c |
| Del'd Philadelphia                | 1.95c |
| Del'd New York                    | 2.00c |
| F.o.b. Birmingham                 | 1.95c |
| F.o.b. cars dock Gulf ports       | 2.20c |
| F.o.b. cars dock Pacific ports    | 2.35c |
| Wrought iron plates, f.o.b. P'gh. | 3.20c |

| Floor Plates                   |       |
|--------------------------------|-------|
| F.o.b. Pittsburgh              | 3.35c |
| F.o.b. Chicago                 | 3.40c |
| F.o.b. Coatesville             | 3.45c |
| F.o.b. cars dock Gulf ports    | 3.75c |
| F.o.b. cars dock Pacific ports | 3.90c |

| Structural Shapes              |       |
|--------------------------------|-------|
| Base per Lb.                   |       |
| F.o.b. Pittsburgh              | 1.80c |
| F.o.b. Chicago                 | 1.85c |
| Del'd Cleveland                | 1.90c |
| F.o.b. Buffalo                 | 1.90c |
| F.o.b. Bethlehem               | 1.90c |
| Del'd Philadelphia             | 2.00c |
| Del'd New York                 | 2.05c |
| F.o.b. Birmingham              | 1.95c |
| F.o.b. cars dock Gulf ports    | 2.25c |
| F.o.b. cars dock Pacific ports | 2.35c |

| Steel Sheet Piling             |       |
|--------------------------------|-------|
| Base per Lb.                   |       |
| F.o.b. Pittsburgh              | 2.15c |
| F.o.b. Chicago                 | 2.25c |
| F.o.b. Buffalo                 | 2.25c |
| F.o.b. cars dock Gulf ports    | 2.60c |
| F.o.b. cars dock Pacific ports | 2.60c |

| SHEETS, STRIP, TIN PLATE               |       |
|--|-------|
| TERNE PLATE                            |       |
| Sheets                                 |       |
| Hot Rolled                             |       |
| Base per Lb.                           |       |
| No. 10, f.o.b. Pittsburgh              | 1.85c |
| No. 10, f.o.b. Gary                    | 1.95c |
| No. 10, del'd Detroit                  | 2.05c |
| No. 10, del'd Phila.                   | 2.14c |
| No. 10, f.o.b. Birmingham              | 2.00c |
| No. 10, f.o.b. dock cars Pacific ports | 2.40c |

| Hot-Rolled Annealed                    |       |
|--|-------|
| No. 24, f.o.b. Pittsburgh              | 2.40c |
| No. 24, f.o.b. Gary                    | 2.50c |
| No. 24, del'd Detroit                  | 2.60c |
| No. 24, del'd Phila.                   | 2.60c |
| No. 24, f.o.b. Birmingham              | 2.55c |
| No. 24, f.o.b. dock cars Pacific ports | 3.05c |
| No. 24, wrought iron, Pittsburgh       | 4.30c |

| Heavy Cold-Rolled                           |       |
|---|-------|
| No. 10 gage, f.o.b. Pittsburgh              | 2.50c |
| No. 10 gage, f.o.b. Gary                    | 2.60c |
| No. 10 gage, del'd Detroit                  | 2.70c |
| No. 10 gage, del'd Phila.                   | 2.70c |
| No. 10 gage, f.o.b. Birmingham              | 2.55c |
| No. 10 gage, f.o.b. dock cars Pacific ports | 3.10c |

| Light Cold-Rolled                           |       |
|---|-------|
| No. 20 gage, f.o.b. Pittsburgh              | 2.95c |
| No. 20 gage, f.o.b. Gary                    | 3.05c |
| No. 20 gage, del'd Detroit                  | 3.15c |
| No. 20 gage, del'd Phila.                   | 3.24c |
| No. 20 gage, f.o.b. Birmingham              | 3.10c |
| No. 20 gage, f.o.b. dock cars Pacific ports | 3.50c |

| Galvanized Sheets                      |       |
|--|-------|
| No. 24, f.o.b. Pittsburgh              | 3.10c |
| No. 24, f.o.b. Gary                    | 3.20c |
| No. 24, del'd Phila.                   | 3.20c |
| No. 24, f.o.b. Birmingham              | 3.25c |
| No. 24, f.o.b. dock cars Pacific ports | 3.70c |
| No. 24, wrought iron, Pittsburgh       | 4.95c |

| Long Termes                    |       |
|--------------------------------|-------|
| No. 24, unsorted 8-lb. coating |       |
| f.o.b. Pittsburgh              | 3.40c |
| F.o.b. cars dock Pacific ports | 4.10c |

| Vitrous Enameling Stock   |       |
|---------------------------|-------|
| No. 20, f.o.b. Pittsburgh | 3.10c |

| Tin Mill Black Plate             |       |
|----------------------------------|-------|
| No. 28, f.o.b. Pittsburgh        | 2.75c |
| No. 28, Gary                     | 2.85c |
| No. 28, cars dock, Pacific Coast | 3.35c |

| Tin Plate Base per Box                         |        |
|--|--------|
| Standard cokes, f.o.b. P'gh district mill      | \$5.25 |
| Standard cokes, f.o.b. Gary                    | 5.35   |
| Standard cokes, f.o.b. cars dock Pacific ports | 5.90   |

| Terne Plate                |         |
|----------------------------|---------|
| (F.o.b. Pittsburgh)        |         |
| (Per Package, 20 x 28 in.) |         |
| 8-lb. coating I.C.         | \$10.00 |
| 15-lb. coating I.C.        | 12.00   |
| 20-lb. coating I.C.        | 13.00   |
| 25-lb. coating I.C.        | 14.00   |
| 30-lb. coating I.C.        | 15.25   |
| 40-lb. coating I.C.        | 17.50   |

| Hot-Rolled Hoops, Bands, Strips and Flats under 1/4 In. |       |
|---|-------|
| Base per Lb.  |       |
| All widths up to 24 in., P'gh.                          | 1.85c |
| All widths up to 24 in., Chicago                        | 1.95c |
| All widths up to 24 in., del'd De-                      |       |
| troit   | 2.05c |
| All widths up to 24 in., Birmingham                     | 2.00c |
| Cooperage stock, Pittsburgh                             | 2.10c |
| Cooperage stock, Chicago                                | 2.20c |

| Cold-Rolled Strips |       |
|--------------------|-------|
| Base per Lb.       |       |
| F.o.b. Pittsburgh  | 2.60c |
| F.o.b. Cleveland   | 2.60c |
| Del'd Chicago      | 2.85c |
| F.o.b. Worcester   | 2.80c |

| Fender Stock                    |       |
|---------------------------------|-------|
| No. 14, Pittsburgh or Cleveland | 2.90c |
| No. 14, Worcester               | 3.30c |
| No. 20, Pittsburgh or Cleveland | 3.30c |
| No. 20, Worcester               | 3.70c |

| Hot-Rolled Rail Steel Strips |       |
|------------------------------|-------|
| Base per Lb.                 |       |
| F.o.b. Pittsburgh            | 1.70c |
| F.o.b. Chicago               | 1.75c |
| F.o.b. Birmingham            | 1.85c |

| WIRE PRODUCTS   |       |
|---|-------|
| (Carload lots, f.o.b. Pittsburgh and Cleveland.)  |       |
| To Manufacturers Trade Per Lb.  |       |
| Bright wire   | 2.30c |
| Spring wire   | 3.20c |
| Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. |       |

| To Jobbing Trade   |  |
|--|--|
| Qualified jobbers are entitled to a reduction of 20c. a 100 lb. from the base price on carload shipments to stock, and of 10c. a 100 lb. on less-carload shipments to stock. |  |

| Base per Keg                  |        |
|-------------------------------|--------|
| Standard wire nails           | \$2.50 |
| Smooth coated nails           | 2.60   |
| Galvanized nails:             |        |
| 15 gage and coarser           | 4.60   |
| 16 gage and finer             | 5.10   |
| Base per 100 Lb.              |        |
| Annealed fence wire           | \$2.45 |
| Galvanized fence wire         | 2.50   |
| Polished staples              | 3.30   |
| Galvanized staples            | 3.55   |
| Barbed wire, galvanized       | 3.00   |
| Woven wire fence, base column | 63.00  |

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., and Worcester, Mass., mill prices are \$2 a ton over Pittsburgh (except for woven wire fence at Duluth which is \$3 over Pittsburgh), and Birmingham mill prices are \$3 a ton over Pittsburgh.

On manufacturers' wire prices at Pacific ports are \$9 above the Pittsburgh base. On high-carbon spring wire, prices at Pacific ports are also \$9 above Pittsburgh. On wire nails, barbed wire, staples and fence wire, prices at Houston, Galveston and Corpus Christi are \$6 a ton over Pittsburgh, while New Orleans and Pacific Coast prices are \$8 over Pittsburgh. Exception: on fence wire Pacific Coast prices are \$11 a ton above Pittsburgh.

| Wire Hoops, Twisted or Welded |                  |
|-------------------------------|------------------|
| Off List                      |                  |
| F.o.b. Pittsburgh             | 35 and 2 1/2 off |
| F.o.b. Chicago                | 35 off           |

| Bale Ties, Single Loop  |         |
|---|---------|
| Base per Net Ton  |         |
| F.o.b. Pittsburgh   | \$63.00 |
| F.o.b. Chicago  | 64.00   |
| F.o.b. Duluth   | 65.00   |
| F.o.b. Cleveland  | 63.00   |
| F.o.b. Birmingham   | 66.00   |
| F.o.b. cars dock Houston, Galveston, Beaumont, Orange or Corpus Christi, Tex. | 72.00   |
| F.o.b. cars dock Pacific ports  | 74.00   |

| STEEL AND WROUGHT PIPE AND TUBING            |  |
|--|--|
| Welded Pipe                                  |  |
| Base Discounts, f.o.b. Pittsburgh            |  |
| District and Lorain, Ohio, Mills             |  |
| F.o.b. Pittsburgh only on wrought iron pipe. |  |

| Butt Weld                |        |
|--------------------------|--------|
| Inches Steel Black Galv. |        |
| 1/4                      | 29 1/2 |
| 3/8                      | 31 1/2 |
| 1/2                      | 33 1/2 |
| 3/4                      | 35 1/2 |
| 1                        | 37 1/2 |
| 1 1/4                    | 39 1/2 |
| 1 1/2                    | 41 1/2 |
| 1 3/4                    | 43 1/2 |
| 2                        | 45 1/2 |

| Wrought Iron       |        |
|--------------------|--------|
| Inches Black Galv. |        |
| 1/4                | 29 1/2 |
| 3/8                | 31 1/2 |
| 1/2                | 33 1/2 |
| 3/4                | 35 1/2 |
| 1                  | 37 1/2 |
| 1 1/4              | 39 1/2 |
| 1 1/2              | 41 1/2 |
| 1 3/4              | 43 1/2 |
| 2                  | 45 1/2 |

| Lap Weld |        |
|----------|--------|
| 2        | 60 51  |
| 2 1/2    | 63 54  |
| 3        | 66 56  |
| 3 1/2    | 69 58  |
| 4        | 72 60  |
| 4 1/2    | 75 62  |
| 5        | 78 64  |
| 5 1/2    | 81 66  |
| 6        | 84 68  |
| 6 1/2    | 87 70  |
| 7        | 90 72  |
| 7 1/2    | 93 74  |
| 8        | 96 76  |
| 8 1/2    | 99 78  |
| 9        | 102 80 |
| 9 1/2    | 105 82 |
| 10       | 108 84 |
| 10 1/2   | 111 86 |
| 11       | 114 88 |
| 11 1/2   | 117 90 |
| 12       | 120 92 |

| Butt Weld, extra strong, plain ends |           |
|-------------------------------------|-----------|
| 1/4                                 | 48 33 1/2 |
| 3/8                                 | 51 36 1/2 |
| 1/2                                 | 54 39 1/2 |
| 3/4                                 | 57 42 1/2 |
| 1                                   | 60 45 1/2 |
| 1 1/4                               | 63 48 1/2 |
| 1 1/2                               | 66 51 1/2 |
| 1 3/4                               | 69 54 1/2 |
| 2                                   | 72 57 1/2 |

| Lap Weld, extra strong, plain ends |         |
|------------------------------------|---------|
| 2                                  | 58 50   |
| 2 1/2                              | 62 54   |
| 3                                  | 66 58   |
| 3 1/2                              | 70 62   |
| 4                                  | 74 66   |
| 4 1/2                              | 78 70   |
| 5                                  | 82 74   |
| 5 1/2                              | 86 78   |
| 6                                  | 90 82   |
| 6 1/2                              | 94 86   |
| 7                                  | 98 90   |
| 7 1/2                              | 102 94  |
| 8                                  | 106 98  |
| 8 1/2                              | 110 102 |
| 9                                  | 114 106 |
| 9 1/2                              | 118 110 |
| 10                                 | 122 114 |
| 10 1/2                             | 126 118 |
| 11                                 | 130 122 |
| 11 1/2                             | 134 126 |
| 12                                 | 138 130 |

On standard steel pipe an extra 5% off is allowed on sales to consumers while two 5's off apply on sales to jobbers. On less-than-carload shipments prices are determined by adding 20 and 25% and the carload freight rate to the base card. On structural steel pipe the base card is reduced 2 points and two 5's off are allowed to consumers and three 5's off to jobbers.

Note—Chicago district mills have a base

two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills the billing being from the point producing the lowest price to destination.

| Boiler Tubes   |  |
|--|--|
| Seamless Steel Commercial Boiler Tubes and Locomotive Tubes      |  |
| (Net base prices per 100 ft. f.o.b. Pittsburgh, in carload lots) |  |

| Cold Drawn               |         |
|--------------------------|---------|
| Base per 100 Lb.         |         |
| 1 in. o.d. 13 B.W.G.     | \$ 8.60 |
| 1 1/4 in. o.d. 13 B.W.G. | 10.19   |
| 1 1/2 in. o.d. 13 B.W.G. | 11.26   |
| 1 3/4 in. o.d. 13 B.W.G. | 12.81   |
| 2 in. o.d. 13 B.W.G.     | 14.35   |
| 2 1/4 in. o.d. 13 B.W.G. | 16.00   |
| 2 1/2 in. o.d. 12 B.W.G. | 19.29   |
| 2 3/4 in. o.d. 12 B.W.G. | 20.45   |
| 3 in. o.d. 12 B.W.G.     | 21.45   |
| 3 1/4 in. o.d. 11 B.W.G. | 25.22   |
| 3 1/2 in. o.d. 11 B.W.G. | 27.09   |
| 4 in. o.d. 10 B.W.G.     | 33.60   |
| 4 1/4 in. o.d. 10 B.W.G. | 41.08   |
| 5 in. o.d. 9 B.W.G.      | 51.56   |
| 6 in. o.d. 7 B.W.G.      | 79.15   |

Extras for less-carload quantities: 25,000 lb. or ft. to 39,999 lb. or ft. 5 %  
10,000 lb. or ft. to 24,999 lb. or ft. 12 1/2 %  
2,000 lb. or ft. to 9,999 lb. or ft. 25 %  
Under 2,000 lb. or ft. 40 %

| Hot-Finished Lapweld Steel Pressure Tubes                         |  |
|---|--|
| (Net base prices per 100 ft., f.o.b. Pittsburgh, in carload lots) |  |

| Base per 100 Lb.         |         |
|--------------------------|---------|
| 1 1/4 in. o.d. 13 B.W.G. | \$ 9.71 |
| 1 1/2 in. o.d. 13 B.W.G. | 11.06   |
| 1 3/4 in. o.d. 13 B.W.G. | 12.38   |
| 2 in. o.d. 13 B.W.G.     | 13.70   |
| 2 1/4 in. o.d. 12 B.W.G. | 16.58   |
| 2 1/2 in. o.d. 12 B.W.G. | 17.54   |
| 3 in. o.d. 12 B.W.G.     | 18.35   |
| 3 1/4 in. o.d. 11 B.W.G. | 21.56   |
| 3 1/2 in. o.d. 11 B.W.G. | 23.15   |
| 4 in. o.d. 10 B.W.G.     | 28.66   |
| 4 1/4 in. o.d. 10 B.W.G. | 35.32   |
| 5 in. o.d. 9 B.W.G.      | 44.25   |
| 6 in. o.d. 7 B.W.G.      | 68.14   |

| Quantity Extras:                                     |  |
|--|--|
| 40,000 lb. or ft. to 39,999 lb. or ft. base          |  |
| 25,000 lb. or ft. to 39,999 lb. or ft. plus 5 %      |  |
| 10,000 lb. or ft. to 24,999 lb. or ft. plus 12 1/2 % |  |
| 2,000 lb. or ft. to 9,999 lb. or ft. plus 25 %       |  |
| Under 2,000 lb. or ft. plus 40 %                     |  |

| CHARCOAL IRON BOILER TUBES        |  |
|-----------------------------------|--|
| Base Discounts, f.o.b. Pittsburgh |  |

| In. O. D.                               |           |
|---|-----------|
| 1 1/4 and 1% .....                      | 44        |
| 1 1/2 — 2% .....                        | 13 and 14 |
| 2 1/4 — 2% .....                        | 16 and 18 |
| 3 .....                                 | 17 and 18 |
| 3 1/4 — 3 1/2 .....                     | 18 and 19 |
| 4 .....                                 | 20 and 21 |
| 4 1/4 .....                             | 21 and 22 |
| Extras for quantity: For 1 1/4 to 1 1/2 |           |

(Continued from Page 68)  
**BOLTS, NUTS, RIVETS AND SET SCREWS**

**Bolts and Nuts**  
(F.a.b. Pittsburgh, Cleveland, Birmingham or Chicago)

| Machine bolts                       | Per Cent Off List       |
|-------------------------------------|-------------------------|
| ..... 70, 10, 10 and 10             |                         |
| Carriage bolts                      | ..... 70, 10, 10 and 10 |
| lag bolts                           | ..... 70, 10, 10 and 10 |
| Flange bolts, Nos. 1, 2, 3 and 7    |                         |
| heads                               | ..... 70, 10, 10 and 10 |
| Hot-pressed nuts, blank or tapped   |                         |
| square                              | ..... 70, 10, 10 and 10 |
| Hot-pressed nuts, blank or tapped   |                         |
| hexagons                            | ..... 70, 10, 10 and 10 |
| C.p.c. and t. square or hex. nuts   | 83                      |
| blank or tapped                     | ..... 70, 10, 10 and 10 |
| Semi-finished hexagon nuts, U.S.S.  |                         |
| all sizes                           | ..... 70, 10, 10 and 10 |
| Semi-finished hexagon nuts, S.A.E.  |                         |
| 1/2 in. to 7/16 in. diameter        | 70, 10, 10 and 10       |
| 1/2 in. to 1 in. diameter           | 70, 10, 10 and 10       |
| larger than 1 in. diameter          | 70, 10, 10 and 10       |
| Store bolts in packages, Pittsburgh | 75                      |
| Store bolts in packages, Chicago    | 75                      |
| Store bolts in packages, Cleveland  | 75                      |
| Store bolts in bulk, Chicago        | 83                      |
| Store bolts in bulk, Cleveland      | 83                      |
| Store bolts in bulk, Birmingham     | 83                      |
| Store bolts in bulk, Birmingham     | 83                      |

| Large Rivets                   | Base per 100 Lb. |
|--------------------------------|------------------|
| (1/2-in. and larger)           |                  |
| F.a.b. Pittsburgh or Cleveland | \$2.90           |
| F.a.b. Chicago                 | 3.00             |
| F.a.b. Birmingham              | 3.05             |

| Small Rivets                  | Per Cent Off List |
|-------------------------------|-------------------|
| (7/16-in. and smaller)        |                   |
| F.a.b. Pittsburgh             | ..... 70 and 8    |
| F.a.b. Cleveland              | ..... 70 and 8    |
| F.a.b. Chicago and Birmingham | ..... 70 and 5    |

| Cap and Set Screws   | Per Cent Off List |
|--|-------------------|
| Freight allowed up to but not exceeding 1/2 in. per 100 lb. on lots of 200 lb. or more |                   |
| Milled cap screws, 1 in. dia. and smaller  | 85                |
| Milled standard set screws, case hardened, 1 in. dia. and smaller                      | 75 and 10         |
| Milled headless set screws, cut thread 1/2 in. and smaller                             | 75 and 10         |
| Upset hex. head cap screws, U.S.S.S. or S.A.E. thread, 1 in. dia. and smaller          | 85 and 10         |
| Upset set screws, cut and oval point   | 80                |
| Milled studs   | ..... 65 and 10   |

**Alloy and Stainless Steel**

| Alloy Steel Ingots  | Base Price         |
|---|--------------------|
| F.a.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem |                    |
| Uncropped   | \$40 per gross ton |

| Alloy Steel Blooms, Billets and Slabs                             | Base Price |
|---|------------|
| F.a.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem |            |
| Base price, \$49 a gross ton                                      |            |
| Price del'd Detroit is \$52                                       |            |

| Alloy Steel Bars   | Base Price               |
|--|--------------------------|
| F.a.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton    |                          |
| Open-hearth grade, base  | 2.45c.                   |
| Delivered price at Detroit is  | 2.60c.                   |
| S.A.E.   |                          |
| Alloy  |                          |
| Numbers  | Differential per 100 lb. |
| 2000 (1/2% Nickel)   | \$0.25                   |
| 2100 (3/4% Nickel)   | 0.55                     |
| 2200 (3/4% Nickel)   | 1.50                     |
| 2300 (5% Nickel)   | 2.25                     |
| 2100 Nickel Chromium   | 0.55                     |
| 2200 Nickel Chromium   | 1.35                     |
| 2300 Nickel Chromium   | 3.80                     |
| 2400 Nickel Chromium   | 3.20                     |
| 4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)                     | 0.50                     |
| 4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)                     | 0.70                     |
| 4400 Nickel Molybdenum (0.20 to 0.30 Molybdenum) (1.50 to 2.00 Nickel) | 1.05                     |
| 5100 Chromium Steel (0.80 to 0.90 Chromium)                            | 0.35                     |
| 5100 Chromium Steel (0.80 to 1.10 Chromium)                            | 0.45                     |
| 5100 Chromium Spring Steel   | base                     |
| 6100 Chromium Vanadium Bar   | 1.20                     |
| 6100 Chromium Vanadium Spring Steel                                    | 0.95                     |
| Chromium Nickel Vanadium   | 1.50                     |
| Carbon Vanadium  | 0.95                     |

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars is 1/2c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

**Alloy Cold-Finished Bars**

| Alloy Cold-Finished Bars  | Base Price |
|---|------------|
| F.a.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 2.95c. base per lb. |            |

**STAINLESS STEEL No. 302**  
(17 to 19% Cr. 7 to 9% Ni. 0.08 to 0.20% C)  
(Base Prices, f.o.b. Pittsburgh)

| Base              | Per Lb. |
|-------------------|---------|
| Plates            | 23c.    |
| Sheets            | 26c.    |
| Hot-rolled strip  | 30c.    |
| Cold-rolled strip | 27c.    |

**Raw and Semi-Finished Steel**

**Carbon Steel Re-rolling Ingots**

| Carbon Steel Re-rolling Ingots   | Base Price         |
|--|--------------------|
| F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham |                    |
| Uncropped  | \$29 per gross ton |

**Carbon Steel Forging Ingots**

| Carbon Steel Forging Ingots  | Base Price         |
|--|--------------------|
| F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham |                    |
| Uncropped  | \$31 per gross ton |

**Billets, Blooms and Slabs**

| Billets, Blooms and Slabs  | Base Price    |
|--|---------------|
| F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham |               |
| Re-rolling   | ..... \$27.00 |
| Forging quality  | ..... 32.00   |

**Delivered Detroit**

| Delivered Detroit          | Base Price    |
|----------------------------|---------------|
| Re-rolling                 | ..... \$30.00 |
| Forging                    | ..... 35.00   |
| Billets Only F.o.b. Duluth | ..... 29.00   |
| Forging                    | ..... 34.00   |

**Sheet Bars**

| Sheet Bars  | Base Price |
|---|------------|
| F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md. |            |
| Open-hearth or Bessemer   | \$28.00    |

**Skelp**

| Skelp  | Base Price   |
|--|--------------|
| F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md. |              |
| Grooved  | ..... 1.70c. |
| Universal  | ..... 1.70c. |
| Sheared  | ..... 1.70c. |

**Tube Rounds**

| Tube Rounds       | Base Price   |
|-------------------|--------------|
| F.o.b. Pittsburgh | ..... 1.90c. |
| F.o.b. Chicago    | ..... 1.85c. |
| F.o.b. Cleveland  | ..... 1.85c. |
| F.o.b. Buffalo    | ..... 1.90c. |
| F.o.b. Birmingham | ..... 1.95c. |

**Wire Rods**

| Wire Rods               | Base Price    |
|-------------------------|---------------|
| (Common soft, base)     |               |
| F.o.b. Pittsburgh       | ..... \$38.00 |
| F.o.b. Cleveland        | ..... 38.00   |
| F.o.b. Chicago          | ..... 39.00   |
| F.o.b. Anderson, Ind.   | ..... 39.00   |
| F.o.b. Youngstown       | ..... 39.00   |
| F.o.b. Worcester, Mass. | ..... 40.00   |
| F.o.b. Birmingham       | ..... 41.00   |
| F.o.b. San Francisco    | ..... 47.00   |

**Pig Iron and Ferroalloys**

**PIG IRON**

**PRICES PER GROSS TON AT BASING POINTS**

| Basing Points       | No. 2 Fdry. | Malleable | Basic   | Bessemer |
|---------------------|-------------|-----------|---------|----------|
| Everett, Mass.      | \$19.50     | \$20.00   | \$19.00 | \$20.50  |
| Bethlehem, Pa.      | 19.50       | 20.00     | 19.00   | 20.50    |
| Hirshboro, Pa.      | 19.50       | 20.00     | 19.00   | 20.50    |
| Swedeland, Pa.      | 19.50       | 20.00     | 19.00   | 20.50    |
| Steelton, Pa.       | 19.50       | 20.00     | 19.00   | 20.50    |
| Sparrows Point, Md. | 19.50       | 20.00     | 19.00   | 20.50    |
| Neville Island, Pa. | 18.50       | 18.50     | 18.00   | 19.00    |
| Sharpsville, Pa.    | 18.50       | 18.50     | 18.00   | 19.00    |
| Youngstown          | 18.50       | 18.50     | 18.00   | 19.00    |
| Buffalo             | 18.50       | 18.50     | 17.50   | 19.50    |
| Erie, Pa.           | 18.50       | 18.50     | 18.00   | 19.50    |
| Cleveland           | 18.50       | 18.50     | 18.00   | 19.00    |
| Toledo, Ohio        | 18.50       | 18.50     | 18.00   | 19.00    |
| Jackson, Ohio       | 20.25       | 20.25     | 19.75   | 20.00    |
| Detroit             | 18.50       | 18.50     | 18.00   | 19.00    |
| Hamilton, Ohio      | 18.50       | 18.50     | 18.00   | 19.00    |
| Chicago             | 18.50       | 18.50     | 18.00   | 19.00    |
| Granite City, Ill.  | 18.50       | 18.50     | 18.00   | 19.00    |
| Duluth, Minn.       | 19.00       | 19.00     | 18.50   | 19.50    |
| Birmingham          | 14.50       | 14.50     | 13.50   | 19.00    |
| Provo, Utah         | 17.50       |           |         |          |

**DELIVERED PRICES PER GROSS TON AT CONSUMING CENTERS**

|                               | No. 2 Fdry. | Malleable | Basic   | Bessemer |
|-------------------------------|-------------|-----------|---------|----------|
| Boston Switching District     | \$20.00     | \$20.50   | \$19.50 | \$21.00  |
| Brooklyn                      | 21.77       | 22.27     | 21.27   | 22.77    |
| Newark or Jersey City, N. J.  | 20.89       | 21.39     | 20.39   | 21.89    |
| Philadelphia                  | 20.26       | 20.76     | 19.76   | 21.26    |
| Cincinnati                    | 19.51       | 19.51     | 19.01   | 20.01    |
| Canton, Ohio                  | 19.76       | 19.76     | 19.26   | 20.26    |
| From Cleveland and Youngstown | 20.50       | 20.50     |         |          |
| Mansfield, Ohio               | 20.26       | 20.26     |         |          |
| From Cleveland and Toledo     | 20.77       | 20.77     |         |          |
| From Hamilton, Ohio           | 20.55       | 20.55     |         |          |
| South Bend, Ind.              | 19.50       | 19.50     |         |          |
| From Chicago                  | 20.94       |           |         |          |
| St. Paul                      | 20.26       | 20.26     |         |          |
| Davenport, Iowa               | 21.04       | 21.04     |         |          |
| From Chicago                  |             |           |         |          |
| Kansas City                   |             |           |         |          |
| From Granite City             |             |           |         |          |

Delivered prices on Southern iron for shipment to Northern points are 38c. a gross ton below delivered prices from the nearest Northern basing points.

**LOW PHOSPHORUS PIG IRON**

| Low Phosphorus Pig Iron   | Base Price |
|---|------------|
| Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y. | \$23.50    |
| Johnson City, Tenn.   | 23.50      |
| Del'd Chicago   | 29.15      |
| Johnson City, Tenn. (off grade)                                   | 19.50      |

**GRAY FORCE PIG IRON**

| Gray Force Pig Iron         | Base Price |
|-----------------------------|------------|
| Valley furnace              | \$18.00    |
| Pittsburgh district furnace | 18.00      |

**CHARCOAL PIG IRON**

| Charcoal Pig Iron     | Base Price |
|-----------------------|------------|
| Lake Superior furnace | \$21.00    |
| Delivered Chicago     | 24.04      |
| Delivered Buffalo     | 24.28      |

**CANADA**

**Pig Iron**

| Pig Iron                      | Base Price |
|-------------------------------|------------|
| Per gross ton:                |            |
| Delivered Toronto             |            |
| No. 1 fdy., sil. 2.25 to 2.75 | \$21.00    |
| No. 2 fdy., sil. 1.75 to 2.75 | 20.50      |
| Malleable                     | 21.00      |

**Delivered Montreal**

| Delivered Montreal            | Base Price |
|-------------------------------|------------|
| No. 1 fdy., sil. 2.25 to 2.75 | \$22.50    |
| No. 2 fdy., sil. 1.75 to 2.25 | 22.00      |
| Malleable                     | 22.50      |
| Basic                         | 22.90      |

**FERROALLOYS**

**Ferromanganese**

| Ferromanganese  | Base Price |
|---|------------|
| F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans |            |
| Domestic, 80% (carload)   | \$85.00    |

**Spiegeleisen**

| Spiegeleisen        | Base Price |
|---------------------|------------|
| Domestic, 19 to 21% | \$26.00    |

**Electric Ferrosilicon**

| Electric Ferrosilicon                                       | Base Price |
|---|------------|
| Per Gross Ton Delivered                                     |            |
| 50% (carloads)  | \$77.50    |
| 50% (ton lots)  | 85.00      |
| 75% (carloads)  | 126.00     |
| 75% (ton lots)  | 136.00     |
| 14% to 16% (f.o.b.) Welland, Ont. (in carloads) (duty paid) | 31.00      |
| 14% to 16% (less carloads)                                  | 38.50      |

**Silvery Iron**

| Silvery Iron                  | Base Price |
|-------------------------------|------------|
| F.o.b. Jackson, Ohio, Furnace |            |
| Per Gross Ton                 |            |
| 6%                            | \$22.75    |
| 7%                            | 23.75      |
| 8%                            | 24.75      |
| 9%                            | 25.75      |
| 10%                           | 26.75      |
| 11%                           | 27.75      |
| 12%                           | 28.75      |
| 13%                           | 29.75      |
| 14%                           | 30.75      |
| 15%                           | 31.75      |
| 16%                           | 32.75      |
| 17%                           | 33.75      |
| 18%                           | 34.75      |
| 19%                           | 35.75      |
| 20%                           | 36.75      |
| 21%                           | 37.75      |
| 22%                           | 38.75      |
| 23%                           | 39.75      |
| 24%                           | 40.75      |
| 25%                           | 41.75      |
| 26%                           | 42.75      |
| 27%                           | 43.75      |
| 28%                           | 44.75      |
| 29%                           | 45.75      |
| 30%                           | 46.75      |
| 31%                           | 47.75      |
| 32%                           | 48.75      |
| 33%                           | 49.75      |
| 34%                           | 50.75      |
| 35%                           | 51.75      |
| 36%                           | 52.75      |
| 37%                           | 53.75      |
| 38%                           | 54.75      |
| 39%                           | 55.75      |
| 40%                           | 56.75      |
| 41%                           | 57.75      |
| 42%                           | 58.75      |
| 43%                           | 59.75      |
| 44%                           | 60.75      |
| 45%                           | 61.75      |
| 46%                           | 62.75      |
| 47%                           | 63.75      |
| 48%                           | 64.75      |
| 49%                           | 65.75      |
| 50%                           | 66.75      |
| 51%                           | 67.75      |
| 52%                           | 68.75      |
| 53%                           | 69.75      |
| 54%                           | 70.75      |
| 55%                           | 71.75      |
| 56%                           | 72.75      |
| 57%                           | 73.75      |
| 58%                           | 74.75      |
| 59%                           | 75.75      |
| 60%                           | 76.75      |
| 61%                           | 77.75      |
| 62%                           | 78.75      |
| 63%                           | 79.75      |
| 64%                           | 80.75      |
| 65%                           | 81.75      |
| 66%                           | 82.75      |
| 67%                           | 83.75      |
| 68%                           | 84.75      |
| 69%                           | 85.75      |
| 70%                           | 86.75      |
| 71%                           | 87.75      |
| 72%                           | 88.75      |
| 73%                           | 89.75      |
| 74%                           | 90.75      |
| 75%                           | 91.75      |
| 76%                           | 92.75      |
| 77%                           | 93.75      |
| 78%                           | 94.75      |
| 79%                           | 95.75      |
| 80%                           | 96.75      |
| 81%                           | 97.75      |
| 82%                           | 98.75      |
| 83%                           | 99.75      |
| 84%                           | 100.75     |
| 85%                           | 101.75     |
| 86%                           | 102.75     |
| 87%                           | 103.75     |
| 88%                           | 104.75     |
| 89%                           | 105.75     |
| 90%                           | 106.75     |
| 91%                           | 107.75     |
| 92%                           | 108.75     |
| 93%                           | 109.75     |
| 94%                           | 110.75     |
| 95%                           | 111.75     |
| 96%                           | 112.75     |
| 97%                           | 113.75     |
| 98%                           | 114.75     |
| 99%                           | 115.75     |
| 100%                          | 116.75     |

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed.

**Bessemer Ferrosilicon**

| F.o.b. Jackson, Ohio, Furnace |               |     |               |
|-------------------------------|---------------|-----|---------------|
|                               | Per Gross Ton |     | Per Gross Ton |
| 10%                           | .....\$27.75  | 14% | .....\$33.25  |
| 11%                           | ..... 28.75   | 15% | ..... 34.75   |
| 12%                           | ..... 30.25   | 16% | ..... 36.25   |
| 13%                           | ..... 31.75   | 17% | ..... 37.75   |



# Iron and Steel Scrap

## PITTSBURGH

Per gross ton delivered consumers' yards:

|                                  |                    |
|----------------------------------|--------------------|
| No. 1 heavy melting steel        | \$10.25 to \$10.75 |
| No. 2 heavy melting steel        | 9.50 to 10.00      |
| No. 2 railroad wrought           | 10.25 to 10.75     |
| Scrap rails                      | 10.25 to 10.75     |
| Rails 3 ft. and under            | 13.50 to 14.00     |
| Compressed sheet steel           | 10.25 to 10.75     |
| Hand bundled sheet steel         | 9.00 to 9.50       |
| Hvy. steel axle turnings         | 9.00 to 9.50       |
| Machine shop turnings            | 6.75 to 7.25       |
| Short shov. turnings             | 6.75 to 7.25       |
| Short mixed borings and turnings | 5.25 to 5.75       |
| Cast iron borings                | 5.25 to 5.75       |
| Cast iron carwheels              | 11.00 to 11.50     |
| Heavy breakable cast             | 10.00 to 10.50     |
| No. 1 cast                       | 11.00 to 11.50     |
| Railr. knuckles and couplers     | 13.50 to 14.00     |
| Rail. coil and leaf springs      | 13.50 to 14.00     |
| Bolled steel wheels              | 13.50 to 14.00     |
| Low phos. billet crops           | 13.00 to 13.50     |
| Low phos. sheet bar crops        | 13.00 to 13.50     |
| Low phos. plate scrap            | 12.50 to 13.00     |
| Low phos. punchings              | 12.50 to 13.00     |
| Steel car axles                  | 13.00 to 13.50     |

## CHICAGO

Delivered Chicago district consumers:

Per Gross Ton

|                                    |                  |
|------------------------------------|------------------|
| Heavy melting steel                | \$8.50 to \$9.00 |
| Automobile hvy. melt. steel        | 8.00 to 8.50     |
| Shoveling steel                    | 8.50 to 9.00     |
| Hydraulic comp. sheets             | 7.50 to 8.00     |
| Drop forge flashings               | 6.50 to 7.00     |
| No. 1 busheling                    | 7.00 to 7.50     |
| Rolled carwheels                   | 10.00 to 10.50   |
| Railroad leaf springs              | 10.00 to 10.50   |
| Steel couplers and knuckles        | 10.00 to 10.50   |
| Coil springs                       | 10.50 to 11.00   |
| Coil springs (elec. fur.)          | 8.00 to 8.50     |
| Low phos. punchings                | 10.00 to 10.50   |
| Low phos. plates, 12 in. and under | 10.00 to 10.50   |
| Cast iron borings                  | 4.50 to 5.00     |
| Short shoveling turnings           | 4.50 to 5.00     |
| Machine shop turnings              | 4.25 to 4.75     |
| Revolving tires                    | 10.00 to 10.50   |
| Steel rails, less than 3 ft.       | 10.75 to 11.25   |
| Steel rails, less than 3 ft.       | 11.50 to 12.00   |
| Angle bars, steel                  | 10.00 to 10.50   |
| Cast iron carwheels                | 9.50 to 10.00    |
| Railroad malleable                 | 9.00 to 9.50     |
| Agricultural malleable             | 7.75 to 8.25     |

Per Net Ton

|                          |                    |
|--------------------------|--------------------|
| Iron car axles           | \$12.00 to \$12.50 |
| Steel car axles          | 10.00 to 10.50     |
| No. 1 railroad wrought   | 7.00 to 7.50       |
| No. 2 railroad wrought   | 7.50 to 8.00       |
| No. 2 busheling          | 8.50 to 9.00       |
| Locomotive tires, smooth | 9.00 to 9.50       |
| Pipe and flues           | 4.50 to 5.00       |
| No. 1 machinery cast     | 8.00 to 8.50       |
| Clean automobile cast    | 8.00 to 8.50       |
| No. 1 railroad cast      | 7.00 to 7.50       |
| No. 1 agricultural cast  | 5.00 to 5.50       |
| Store plate              | 5.25 to 5.75       |
| Grate bars               | 4.75 to 5.25       |
| Brake shoes              | 6.00 to 6.50       |

## PHILADELPHIA

Per gross ton delivered consumers' yards:

|                           |                    |
|---------------------------|--------------------|
| No. 1 heavy melting steel | \$9.25 to \$10.00  |
| No. 2 heavy melting steel | 8.25 to 8.75       |
| No. 1 railroad wrought    | \$11.00 to \$11.50 |
| Bundled sheets            | 9.00               |
| Hydraulic compressed, new | 9.00 to 9.50       |
| Hydraulic compressed, old | 6.50 to 7.00       |
| Machine shop turnings     | 5.00 to 5.50       |
| Heavy axle turnings       | 5.00 to 5.50       |
| Cast borings              | 3.00 to 3.50       |
| Heavy breakable cast      | 9.25 to 9.75       |
| Store plate (steel works) | 8.00               |
| No. 1 low phos. heavy     | 13.00 to 14.00     |
| Couplers and knuckles     | 12.50 to 13.00     |
| Rolled steel wheels       | 12.50 to 13.00     |
| No. 1 blast furnace       | 5.00 to 5.50       |
| Spec. iron and steel pipe | 8.00               |
| Shafting                  | 15.25 to 16.25     |
| Steel axles               | 15.50 to 16.00     |
| No. 1 forge fire          | 9.00               |
| Cast iron car wheels      | 10.50 to 11.00     |
| No. 1 cast                | 10.50 to 11.00     |
| Cast borings (chem.)      | 12.00 to 14.00     |
| Steel rails for rolling   | 12.00              |

## CINCINNATI

Dealers' buying prices per gross ton:

|                         |                  |
|-------------------------|------------------|
| Heavy melting steel     | \$6.75 to \$7.25 |
| Scrap rails for melting | 8.00 to 8.50     |
| Loose sheet clippings   | 3.00 to 3.50     |
| Bundled sheets          | 5.50 to 6.00     |
| Cast iron borings       | 4.50 to 5.00     |
| Machine shop turnings   | 4.00 to 4.50     |
| No. 1 busheling         | 5.50 to 6.00     |
| No. 2 busheling         | 2.50 to 3.00     |
| Rails for rolling       | 8.50 to 9.00     |
| No. 1 locomotive tires  | 8.25 to 8.75     |
| Short rails             | 11.00 to 11.50   |
| Cast iron carwheels     | 7.50 to 8.00     |
| No. 1 machinery cast    | 8.75 to 9.25     |
| No. 1 railroad cast     | 8.25 to 8.75     |
| Burnt cast              | 5.75 to 6.25     |
| Store plate             | 5.75 to 6.25     |
| Agricultural malleable  | 7.75 to 8.25     |
| Railroad malleable      | 7.75 to 8.25     |

## CLEVELAND

Per gross ton delivered consumers' yards:

|                                      |                  |
|--------------------------------------|------------------|
| No. 1 heavy melting steel            | \$8.00 to \$8.50 |
| No. 2 heavy melting steel            | 7.50 to 8.00     |
| Compressed sheet steel               | 7.25 to 7.75     |
| Light bundled sheet stampings        | 6.50 to 7.00     |
| Drop forge flashings                 | 7.00 to 7.50     |
| Machine shop turnings                | 6.00 to 6.50     |
| Short shoveling turnings             | 6.50 to 7.00     |
| No. 1 busheling                      | 7.00 to 7.50     |
| Steel axle turnings                  | 7.00 to 7.50     |
| Low phos. billet crops               | 12.50 to 13.00   |
| Cast iron borings and short turnings | 6.25 to 6.75     |
| No. 2 busheling                      | 6.25 to 6.75     |
| No. 1 cast                           | 10.50 to 11.00   |
| Railroad grate bars                  | 7.00 to 7.50     |
| Store plate                          | 6.50 to 7.00     |
| Rails under 3 ft.                    | 12.50 to 13.00   |
| Rails for rolling                    | 15.50 to 16.00   |
| Railroad malleable                   | 11.50 to 12.00   |
| Cast iron carwheels                  | 9.75 to 10.00    |

## BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

|                                  |                    |
|----------------------------------|--------------------|
| No. 1 heavy melting steel        | \$10.00 to \$10.50 |
| No. 2 heavy melting steel        | 9.50 to 10.00      |
| Scrap rails                      | 9.50 to 10.00      |
| New hydraulic comp. sheets       | 8.50 to 9.00       |
| Old hydraulic comp. sheets       | 7.50 to 8.00       |
| Drop forge flashings             | 8.50 to 9.00       |
| No. 1 busheling                  | 8.50 to 9.00       |
| Hvy. steel axle turnings         | 6.50 to 7.00       |
| Machine shop turnings            | 5.50 to 6.00       |
| Knuckles and couplers            | 11.00 to 11.50     |
| Coil and leaf springs            | 11.00 to 11.50     |
| Rolled steel wheels              | 11.00 to 11.50     |
| Low phos. billet crops           | 11.50 to 12.00     |
| Short shov. steel turnings       | 5.50 to 6.00       |
| Short mixed borings and turnings | 5.50 to 6.00       |
| Cast iron borings                | 5.50 to 6.00       |
| No. 2 busheling                  | 5.00 to 5.50       |
| Steel car axles                  | 10.50 to 11.00     |
| Iron axles                       | 10.50 to 11.00     |
| No. 1 machinery cast             | 10.50 to 11.00     |
| No. 1 cupola cast                | 9.00 to 9.50       |
| Store plate                      | 8.50 to 9.00       |
| Steel rails, 3 ft. and under     | 12.00 to 12.50     |
| Cast iron carwheels              | 10.00 to 10.50     |
| Industrial malleable             | 10.50 to 11.00     |
| Railroad malleable               | 10.50 to 11.00     |
| Chemical borings                 | 7.00 to 7.50       |

## BOSTON

Dealers' buying prices per gross ton:

|                             |                  |
|-----------------------------|------------------|
| No. 1 heavy melting steel   | \$5.50 to \$6.00 |
| Scrap T rails               | 5.50 to 6.00     |
| No. 2 steel                 | 5.00 to 5.25     |
| Breakable cast              | 6.00 to 6.50     |
| Machine shop turnings       | 1.25 to 1.50     |
| Bundled skeleton, long      | 3.75 to 4.00     |
| Forge flashings             | 4.25 to 4.50     |
| Blast furnace scrap         | 2.00 to 2.50     |
| Shafting                    | 11.00 to 11.25   |
| Steel car axles             | 10.50 to 11.00   |
| Cast iron borings, chemical | 6.00 to 7.00     |
| Store plate                 | 6.50             |

Per gross ton delivered consumers' yards:

|                      |                  |
|----------------------|------------------|
| Textile cast         | \$7.50 to \$9.00 |
| No. 1 machinery cast | 7.50 to 8.00     |
| Railroad malleable   | 11.00 to 11.50   |

## NEW YORK

Dealers' buying prices per gross ton:

|                                |                  |
|--------------------------------|------------------|
| No. 1 heavy melting steel      | \$7.00 to \$7.50 |
| No. 2 heavy melting steel      | \$5.50 to \$6.50 |
| Heavy breakable cast           | 6.00 to 6.50     |
| No. 1 machinery cast           | 7.00 to 7.50     |
| No. 2 cast                     | 6.25 to 6.75     |
| Store plate                    | 6.50 to 7.00     |
| Steel car axles                | 11.50 to 12.00   |
| No. 1 railroad wrought         | 7.50 to 8.00     |
| No. 1 yard wrought, long       | 6.50 to 7.00     |
| Spec. iron and steel pipe      | 4.50 to 5.00     |
| Forge fire                     | 5.50 to 6.00     |
| Rails for rolling              | 8.00 to 8.75     |
| Short shoveling turnings       | 2.50 to 3.00     |
| Machine shop turnings          | 2.50 to 3.00     |
| Cast borings                   | 3.50 to 3.75     |
| No. 1 blast furnace            | 2.00 to 2.50     |
| Cast borings (chemical)        | 11.00 to 11.50   |
| Unprepared yard iron and steel | 3.00 to 4.00     |

Per gross ton, delivered local foundries:

|                               |         |
|-------------------------------|---------|
| No. 1 machinery cast          | \$10.25 |
| No. 1 hvy. cast (cupola size) | 9.00    |
| No. 2 cast                    | 8.00    |

\*For direct car loading only.

†Loading on barge.

## BIRMINGHAM

Per gross ton delivered consumers' yards:

|                          |                    |
|--------------------------|--------------------|
| Heavy melting steel      | \$9.00             |
| Scrap steel rails        | 10.00              |
| Short shoveling turnings | 6.50               |
| Store plates             | 6.50               |
| Steel axles              | \$10.50 to \$11.00 |
| Iron axles               | 10.50 to 11.00     |
| No. 1 railroad wrought   | 8.50               |
| Rails for rolling        | 11.00              |
| No. 1 cast               | 10.50              |
| Tramcar wheels           | 9.00 to 9.50       |
| Cast iron borings, chem. | 8.00               |

## ST. LOUIS

Per gross ton delivered consumers' yards:

|                        |                  |
|------------------------|------------------|
| Selected heavy steel   | \$8.75 to \$9.25 |
| No. 1 heavy melting    | 7.00 to 7.50     |
| No. 2 heavy melting    | 6.50 to 7.00     |
| No. 1 locomotive tires | 9.50 to 10.00    |
| Misc. stand-sec. rails | 8.75 to 9.25     |
| Railroad springs       | 8.50 to 9.00     |
| Bundled sheets         | 6.00 to 6.50     |
| No. 2 railroad wrought | 7.50 to 8.00     |
| No. 1 busheling        | 5.90 to 6.50     |

|  |                |
|--|----------------|
| Cast iron borings and shoveling turnings | 2.50 to 3.00   |
| Rails for rolling                        | 9.25 to 9.75   |
| Machine shop turnings                    | 2.50 to 3.00   |
| Heavy turnings                           | 5.50 to 6.00   |
| Steel car axles                          | 10.50 to 11.00 |
| Iron car axles                           | 12.50 to 13.00 |
| No. 1 railroad wrought                   | 5.50 to 6.00   |
| Steel rails less than 3 ft.              | 10.75 to 11.25 |
| Steel angle bars                         | 9.00 to 9.50   |
| Cast iron carwheels                      | 7.50 to 8.00   |
| No. 1 machinery cast                     | 8.50 to 9.00   |
| Railroad malleable                       | 8.50 to 9.00   |
| No. 1 railroad cast                      | 8.50 to 9.00   |
| Store plate                              | 6.50 to 7.00   |
| Agricult. malleable                      | 8.50 to 9.00   |

## DETROIT

Dealers' buying prices per gross ton:

|                            |                  |
|----------------------------|------------------|
| Heavy melting steel        | \$7.00 to \$7.50 |
| Borings and short turnings | 5.90 to 6.50     |

## ORES, FLUORSPAR, COKE, FUEL, REFRACTORIES

### Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton

|                                      |        |
|--------------------------------------|--------|
| Old range, Bessemer, 51.5% iron      | \$4.80 |
| Old range, non-Bessemer, 51.50% iron | 4.65   |
| Mesabi, Bessemer, 51.50% iron        | 4.65   |
| Mesabi, non-Bessemer, 51.50% iron    | 4.50   |
| High phosphorus, 51.50% iron         | 4.40   |

### Foreign Ore

C.A.F. Philadelphia or Baltimore

Per Unit

|  |        |
|--|--------|
| Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algeria | 9.50c. |
| Iron, low phos., Swedish, average 68% iron                           | 9.50c. |
| Iron, basic or foundry, Swedish, aver. 65% iron                      | 9c.    |
| Iron, basic or foundry, Russian, aver. 65% iron                      | 9c.    |
| Manganese, Caucasian, washed 52%                                     | 26c.   |
| Manganese, African, Indian, 44-48%                                   | 21c.   |
| Manganese, African, Indian, 48-51%                                   | 24c.   |
| Manganese, Brazilian, 46 to 48%                                      | 20c.   |

Per Net Ton Unit

|  |                    |
|--|--------------------|
| Tungsten, Chinese, wolframite, duty paid, delivered* | \$17.50 to \$18.50 |
| Tungsten, domestic scheelite, delivered†             | 17.00              |

Per Gross Ton

|   |         |
|---|---------|
| Chrome, 45%, Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic Seaboard | \$17.00 |
| Chrome, 48%, Cr <sub>2</sub> O <sub>3</sub> , c.i.f. Atlantic Seaboard        | 20.00   |

\*Quotations nominal in absence of sales.  
†Nominal; no supplies available.

### Fluorspar

Per Net Ton

|  |                    |
|--|--------------------|
| Domestic, washed gravel, 85-5 f.o.b. Kentucky and Illinois mines for all-rail shipment                           | \$15.50 to \$16.00 |
| Same grade for Ohio River barge shipment for Kentucky and Illinois River landings                                | 17.50              |
| No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines   | \$15.50 to 16.00   |
| Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid                              | 19.00              |
| Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines | 30.00              |

## COKE, COAL AND FUEL OIL

### Coke

Per Net Ton

|   |              |
|---|--------------|
| Furnace, f.o.b. Connellsville   | \$3.85       |
| Foundry, f.o.b. Connellsville   | 4.60 to 5.10 |
| Foundry, by-product, Chicago ovens, for delivery outside switching district | 8.50         |
| Foundry, by-product, delivered in Chicago switching district                | 9.25         |
| Foundry, by-product, New England, delivered                                 | 11.00        |
| Foundry, by-product, Newark or Jersey City, del'd                           | 8.20 to 8.81 |
| Foundry, by-product, Phila.   | 9.00         |

|                        |                  |
|------------------------|------------------|
| Long turnings          | \$3.75 to \$4.25 |
| No. 1 machinery cast   | 9.00 to 9.50     |
| Automotive cast        | 9.75 to 10.25    |
| Hydraulic comp. sheets | 7.00 to 7.50     |
| Store plate            | 6.25 to 6.75     |
| New factory busheling  | 6.00 to 6.50     |
| Old No. 2 busheling    | 4.00 to 4.50     |
| Sheet clippings        | 3.50 to 4.00     |
| Flashings              | 6.00 to 6.50     |
| Low phos. plate scrap  | 7.25 to 7.75     |

## CANADA

Dealers' buying prices per gross ton:

Toronto Montreal

|                       |               |
|-----------------------|---------------|
| Heavy melting steel   | \$5.50 \$5.50 |
| Rails scrap           | 6.00 4.50     |
| Machine shop turnings | 2.50 2.50     |
| Boiler plate          | 4.50 4.50     |
| Heavy axle turnings   | 2.50 2.50     |
| Cast borings          | 3.00 3.00     |
| Steel borings         | 2.00 2.00     |
| Wrought pipe          | 2.50 2.50     |
| Steel axles           | 4.50 4.50     |
| Axles wrought iron    | 4.50 4.50     |
| No. 1 machinery cast  | 7.75 9.00     |
| Store plate           | 4.50 5.50     |
| Standard carwheels    | 7.25 7.00     |
| Malleable             | 6.75 7.00     |

### Coal

Per Net Ton

|  |                  |
|--|------------------|
| Mine run steam coal, f.o.b. W. Pa. mines | \$1.80 to \$2.00 |
| Mine run coking coal f.o.b. W. Pa. mines | 2.05 to 2.25     |
| Gas coal, %-in. f.o.b. Pa. mines         | 2.25 to 2.50     |
| Mine run gas coal f.o.b. Pa. mines       | 2.05 to 2.25     |
| Steam slack, f.o.b. W. Pa. mines         | 1.55 to 1.65     |
| Gas slack, f.o.b. W. Pa. mines           | 1.90 to 2.10     |

### Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.

|                  |        |
|------------------|--------|
| No. 3 distillate | 4.00c. |
| No. 4 industrial | 3.50c. |

Per Gal. f.o.b. Baltimore

|                  |        |
|------------------|--------|
| No. 3 distillate | 4.00c. |
| No. 4 industrial | 3.50c. |

Per Gal. del'd Chicago

|                           |        |
|---------------------------|--------|
| No. 3 industrial fuel oil | 3.80c. |
| No. 5 industrial fuel oil | 3.30c. |

Per Gal. f.o.b. Cleveland

|                  |        |
|------------------|--------|
| No. 3 distillate | 5.00c. |
| No. 4 industrial | 5.25c. |
| No. 5 industrial | 4.25c. |

## REFRACTORIES

### Fire Clay Brick

Per 1000 f.o.b. Works

High-heat intermediate

### Chrome Brick

Per Net Ton

|               |         |
|---------------|---------|
| Standard size | \$45.00 |
|---------------|---------|

### Silica Brick

Per 1000 f.o.b. Works

|                      |         |
|----------------------|---------|
| Pennsylvania         | \$45.00 |
| Chicago              | 54.00   |
| Birmingham           | 55.00   |
| Silica clay, per ton | 8.00    |

### Magnesite Brick

Per Net Ton

|  |         |
|--|---------|
| Standard size, burned, f.o.b. Baltimore and Chester, Pa. ....    | \$45.00 |
| Unburned, f.o.b. Baltimore ....                                  | 55.00   |
| Imported grain magnesite, f.o.b. Baltimore and Chester, Pa. .... | 45.00   |
| Domestic grain magnesite, f.o.b. Baltimore and Chester, Pa. .... | 40.00   |
| Domestic, f.o.b. Chewelah, Wash. ....                            | 22.00   |

# Warehouse Prices for Steel Products

## PITTSBURGH

| Base per Lb.   |
|--|
| Plates   |
| Structural shapes  |
| Soft steel bars and small shapes                               |
| Reinforcing steel bars   |
| Cold-finished and screw stock                                  |
| Rounds and hexagons  |
| Squares and flats  |
| Hoops and bands under 1/4 in.                                  |
| Hot-rolled annealed sheets (No. 24)                            |
| 25 or more bundles   |
| Galv. sheets (No. 24), 25 or more bundles                      |
| Hot-rolled sheets (No. 10)                                     |
| Galv. corrug. sheets (No. 28), per square (more than 3750 lb.) |
| Spikes, large  |
| Track bolts, all sizes, per 100 count                          |
| Machine bolts, 100 count                                       |
| Carriage bolts, 100 count                                      |
| Nuts, all styles, 100 count                                    |
| Large rivets, base per 100 lb.                                 |
| Wire, black, soft ann'd, base per 100 lb.                      |
| Wire, galv. soft, base per 100 lb.                             |
| Common wire nails, base per keg                                |
| Cement coated nails, base per keg                              |

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

## CHICAGO

| Base per Lb.                               |
|--|
| Plates and structural shapes               |
| Soft steel bars                            |
| Cold-finished steel bars                   |
| Rounds and hexagons                        |
| Flats and squares                          |
| Hot-rolled strip                           |
| Hot-rolled annealed sheets (No. 24)        |
| Galv. sheets (No. 24)                      |
| Hot-rolled sheets (No. 10)                 |
| Spikes (keg lots)                          |
| Track bolts (keg lots)                     |
| Rivets, structural (keg lots)              |
| Rivets, boiler (keg lots)                  |
| Machine bolts                              |
| Carriage bolts                             |
| Lag screws                                 |
| Hot-pressed nuts, sq. head, or black       |
| Hot-pressed nuts, hex. tap or blank        |
| Hex. head cap screws                       |
| Cap point set screws                       |
| Flat head bright wood screws, 3 1/2 and 10 |
| Spring cotter pins                         |
| Stove bolts in full packages               |
| Rd. hd. tank rivets, 7/16 in. and smaller  |
| Wrought washers                            |
| No. 8 black ann'd wire per 100 lb.         |
| Com. wire nails, base per keg              |
| Cement c'd nails, base per keg             |

On plates, shanes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

## NEW YORK

| Base per Lb.                            |
|---|
| Plates, 1/4 in. and heavier             |
| Structural shapes                       |
| Soft steel bars, small shapes           |
| Iron bars                               |
| Iron bars, swed. charcoal               |
| Cold-fin. shafting and screw stock      |
| Rounds and hexagons                     |
| Flats and squares                       |
| Cold-roll. strip, soft and quarter hard |
| Hoops                                   |
| Bands                                   |
| Hot-rolled sheets (No. 10)              |
| Hot-rolled ann'd sheets (No. 24)        |
| Galvanized sheets (No. 24)              |
| Long term sheets (No. 24)               |
| Standard tool steel                     |
| Wire, black annealed (No. 10)           |
| Wire, galv. (No. 10)                    |
| Tire steel, 1 x 1/4 in. and larger      |
| Open hearth spring steel                |
| Common wire nails, base per keg         |

| Per Cent Off List           |
|-----------------------------|
| Machine bolts, cut thread:  |
| All diameters               |
| Carriage bolts, cut thread: |
| All diameters               |
| Boiler tubes:               |
| Lap welded, 2-in.           |
| Seamless welded, 2-in.      |
| Charcoal iron, 2-in.        |
| Charcoal iron, 4-in.        |

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

## ST. LOUIS

| Base per Lb.                            |
|---|
| Plates and struc. shapes                |
| Bars, soft steel or iron                |
| Cold-fin. rounds, shafting, screw stock |
| Hot-rolled annealed sheets (No. 24)     |
| Galv. sheets (No. 24)                   |
| Hot-rolled sheets (No. 10)              |
| Black corrug. sheets (No. 24)           |
| *Galv. corrug. sheets                   |
| Structural rivets                       |
| Boiler rivets                           |

| Per Cent Off List  |
|--|
| Tank rivets, 7/16 in. and smaller  |
| Machine and carriage bolts, lag screws, fittings up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts: |
| 1000 lb. or over   |
| 200 to 999 lb.   |
| 100 to 199 lb.   |
| Less than 100 lb.  |

\*No. 26 and lighter take special prices.

## PHILADELPHIA

| Base per Lb.   |
|--|
| *Plates, 1/4-in. and heavier                             |
| *Structural shapes                                       |
| *Soft steel bars, small shapes, iron bars (except bands) |
| *Reinforc. steel bars, sq. twisted and deformed          |
| Cold-finished steel bars                                 |
| *Steel hoops   |
| *Steel bands, No. 12 and 3/16 in.                        |
| incl.  |
| Spring steel   |
| *Hot-rolled anneal. sheets (No. 24)                      |
| *Galvanized sheets (No. 24)                              |
| *Hot-rolled annealed sheets (No. 10)                     |
| Diam. pat. floor plates, 1/4 in.                         |
| Swedish iron bars  |

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

\*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 50 bundles or over.

‡For less than 2000 lb.

## CLEVELAND

| Base per Lb.                                 |
|--|
| Plates and struc. shapes                     |
| Soft steel bars                              |
| Reinforc. steel bars                         |
| Cold-finished steel bars                     |
| Hot-rolled steel under 1/4 in.               |
| Cold-finished strip                          |
| Hot-rolled annealed sheets (No. 24)          |
| Galvanized sheets (No. 24)                   |
| Hot-rolled sheets (No. 10)                   |
| Hot-rolled 3/16 in. 24 to 48 in. wide sheets |
| Black ann'd wire, per 100 lb.                |
| No. 9 galv. wire, per 100 lb.                |
| Com. wire nails, base per keg                |

\*Plus mill, size and quantity extras.

†Outside delivery 10c. less.

## CINCINNATI

| Base per Lb.                                     |
|--|
| Plates and struc. shapes                         |
| Bars, soft steel or iron                         |
| New billet reinforc. bars                        |
| Rail steel reinforc. bars                        |
| Hoops and bands, 3/16 in. and larger             |
| Cold-finished bars                               |
| Hot-rolled annealed sheets (No. 24)              |
| Galv. sheets (No. 24)                            |
| Hot-rolled sheets (No. 10)                       |
| Structural rivets                                |
| Small rivets                                     |
| No. 9 ann'd wire, per 100 lb. (1000 lb. or over) |
| Com. wire nails, base per keg (1 to 24 kegs)     |
| 25 to 50 kegs                                    |
| Larger quantities                                |
| Cement c'd nails, base 100-lb. keg               |
| Chain, 1-in., per 100 lb.                        |
| Net per 100 Ft.                                  |
| Seamless steel boiler tubes, 2-in. 4-in.         |
| Lap-welded steel boiler tubes, 2-in. 4-in.       |

## BUFFALO

| Base per Lb.                        |
|-------------------------------------|
| Plates                              |
| Struc. shapes                       |
| Soft steel bars                     |
| Reinforcing bars                    |
| Cold-fin. flats and sq.             |
| Rounds and hex.                     |
| Cold-rolled strip steel             |
| Hot-rolled annealed sheets (No. 24) |
| Heavy hot-rolled sheets, 3/16 in.   |
| 24 to 48 in. wide                   |
| Galv. sheets (No. 24)               |
| Bands                               |
| Hoops                               |
| Hot-rolled unannealed sheets        |
| Com. wire nails, base per keg       |
| Black wire, base per 100 lb.        |

## BOSTON

| Per Lb.  |
|--|
| Beams, channels, angles, tees, zees                            |
| H beams and shapes   |
| Plates—sheared, tank and univ. mill, 1/4 in. thick and heavier |
| Floor plates, diamond pattern                                  |
| Bar and bar shapes (mild steel)                                |
| Bands 3/16 in. thick and                                       |
| No. 12 ga. incl.   |
| Half rounds, half ovals, ovals and bevels                      |
| Tire steel   |
| Cold-finished rounds and hexagons                              |
| Cold-rolled strip steel  |
| Cold-finished squares and flats                                |
| Blue annealed sheets, No. 10 gal.                              |
| One pass cold-rolled sheets No. 24                             |
| Galv. sheets (No. 24)  |
| Galvanized steel sheets, No. 24 ga.                            |
| Lead coated sheets, No. 24 ga.                                 |

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

\*Base.

## PACIFIC COAST

| Base per Lb.                        |
|-------------------------------------|
| San Francisco                       |
| Los Angeles                         |
| Seattle                             |
| Plates, tank and U. M.              |
| Shapes, standard                    |
| Soft steel bars                     |
| Reinforcing bars                    |
| Hot-rolled annealed sheets (No. 24) |
| Hot-rolled sheets (No. 10)          |
| Galv. sheets (No. 24)               |
| Cold finished steel:                |
| Rounds                              |
| Squares and hexagons                |
| Flats                               |
| Common wire nails—base per keg      |
| less carload                        |

All items subject to differentials for quantity.

## TRADE NOTES

Chicago Steel-Service Co., 3912 South Ashland Avenue, Chicago, has been appointed distributor in the Chicago territory for welding rods made by the Champion Rivet Co., Cleveland.

Machinery & Welder Corp., Chicago, has opened branch office at 2118 West National Avenue, Milwaukee, in charge of Roy C. Kendall.

Consumers Steel Products Corp. is now located at new warehouse, 6450 East McNichols Road, Detroit.

Revere Copper & Brass, Inc., 230 Park Avenue, New York, has opened an office at 804 Tower Petroleum Building, Dallas, Tex., in charge of W. Russell Weil as southwestern district sales manager.

Baldwin Locomotive Works, Philadelphia, has appointed Carr Brothers, Inc., New York,

exclusive agent for the Republic of Mexico. Sales of Baldwin products and the products of other companies which Baldwin represents in Mexico, will be handled by Carr Brothers' Mexican representative, P. G. Cheatham, Carr Brothers de Mexico, S. A., 2-A Venustiano Carranza No. 48, Mexico, D. F.

Garrett Burgess, Inc., 5050 Joy Road, Detroit, has been appointed representative of the Magnetic Mfg. Co., Milwaukee, in the Detroit territory. The Magnetic line includes Sterns high duty magnetic separators, magnetic clutches, magnetic brakes, solenoids, magnetic conveyor rolls, and other magnetic equipment.

Rogers Brown-Lavino Co., Philadelphia, New York and Boston, has been appointed agent of the Tennessee Coal, Iron & Railroad Co., for the sale of Ensley, Ala., iron in Eastern territory.

## Timken Bearings For High Speed Engines

GRAND TRUNK WESTERN RAILROAD has placed an order with the Timken Roller Bearing Co., Canton, Ohio, for bearings and boxes to be used in the engine trucks under four of their existing high speed passenger locomotives. The locomotives will be equipped at the Battle Creek, Mich., shops of the Grand Trunk Western.

The Grand Trunk Western now has the trailer trucks of 17 of their existing locomotives equipped with Timken bearings.



# Zinc Active as Consumers Enter Market For 6200 Tons at 3.82½c. and 3.85c.

October Copper Sales Exceed 14,000 Tons; Europe Less Active—  
Lead Has Quieted Following Heavy Buying—Tin Is Stagnant

**N**EW YORK, Oct. 30.—Despite the comparatively heavy sales of domestic copper the situation is considered steady and neither producers nor custom smelters perceive anything in current conditions which might result in a market revision. A number of sales for January delivery came to light last week, and total commitments since the first of the month now aggregate over 14,000 tons. The really significant feature of copper today is the activity in foreign selling centers. Consumption abroad has not expanded to any extent, but demands have been exceptionally heavy as the result of rumors concerning proposals to regulate production. Any action of this sort would naturally raise the price abroad, as the current level is admittedly too low

for profitable disposal of metal. The market in London this morning was quoted at 7c. to 7.05c. a lb. c.i.f. usual Continental base ports. This level is about 10 points lower than the previous day but is considered merely a temporary reaction to the steady daily advances of the previous week. In addition to the European demand, Japan has purchased liberal amounts lately. Recent developments in Europe, therefore, seem to uphold the theory that Japan usually buys copper first and Europe second, with United States consumers purchasing in volume after the others are through.

## Tin

This market has not even been enhanced by any consumer inquiry during the past week, consequently price

fluctuations have been nominal and automatically linked with sterling-dollar exchange. In England the buffer pool group has been supporting three-months' standard at £228 10s., but consumers there are displaying no more interest than here. It is questionable when tin using industries will come again into the market. Tin plate operations are sliding off and the immediate outlook for a recovery is not very bright. It is possible that a pick-up may follow the production of new automobile models which is expected to be well under way by the end of the month.

## Lead

Fresh demands have moderated following the active period two weeks ago. Sellers experienced fairly heavy sales on Saturday, but this week has so far been comparatively quiet with only occasional carlot inquiries for prompt delivery. All of the recent sales have been fairly well distributed among consuming outlets. It is estimated that November is over 50 per cent sold and December has hardly been touched. The present price of 3.55c. a lb., St. Louis, is apparently firm despite the ability of one seller to secure orders at a five-point premium. In September the stocks of refined lead decreased 4000 tons despite an increase in output of 4600 tons. Shipments for the month again increased for the fourth successive month, being 36,000 tons. On the basis of present commitments it is expected that October figures will likewise show a stock decrease.

## Zinc

The price basis for Prime Western has been somewhat hesitant throughout the past week but the market is now apparently firmly settled at 3.85c. a lb., delivered East St. Louis. Current business is devoted mostly to nearby delivery, although there is a good demand for first quarter positions. Last week's bookings rose sharply to 6200 tons, mostly at 3.82½c. to 3.85c. a lb., as compared with 3500 tons in the previous period and 3300 tons sold two weeks earlier. Apparently spelter consumers consider present prices desirable and look for a firmer tone in the future, as current operations of zinc consuming industries do not warrant such heavy commitments. At Joplin the ore market is unchanged at \$25 and \$26 a ton respectively for flotation and mill concentrates. Production was again high at 7900 tons for the week, shipments totaled about 5800 tons and stocks on Saturday were estimated at 14,100 tons. This stock position represents a 2100-ton advance from a week earlier. Although the stocks are far from excessive, the present rate of production seems too high with respect to the actual amount of spelter going into consumption.

## The Week's Prices. Cents Per Pound for Early Delivery

|                             | Oct. 24 | Oct. 25 | Oct. 26 | Oct. 27 | Oct. 29 | Oct. 30 |
|-----------------------------|---------|---------|---------|---------|---------|---------|
| Electrolytic copper, N. Y.* | 8.75    | 8.75    | 8.75    | 8.75    | 8.75    | 8.75    |
| Lake copper, N. Y.          | 9.12½   | 9.12½   | 9.12½   | 9.12½   | 9.12½   | 9.12½   |
| Straits tin, Spot, New York | 51.25   | 51.25   | 51.25   | 51.25   | 51.25   | 51.25   |
| Zinc, East St. Louis        | 3.85    | 3.85    | 3.82½   | 3.85    | 3.85    | 3.85    |
| Zinc, New York              | 4.20    | 4.20    | 4.17½   | 4.20    | 4.20    | 4.20    |
| Lead, St. Louis             | 3.55    | 3.55    | 3.55    | 3.55    | 3.55    | 3.55    |
| Lead, New York              | 3.70    | 3.70    | 3.70    | 3.70    | 3.70    | 3.70    |

\*Refinery quotations; price ¼c. higher delivered in Connecticut.  
Aluminum, Virgin 99 per cent plus, 19c. to 22c. a lb., delivered.  
Aluminum, remelt No. 12 (alloy), carload lots delivered, 14c. a lb., average for week.  
Nickel electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.  
Antimony, 9.75c. a lb., New York.  
Brass ingots, 85-5-5-5, 8.25c. a lb., New York and Philadelphia.

| From New York Warehouse<br>Delivered Prices, Base per Lb. |                    |
|---|--------------------|
| Tin, Straits pig  | 52.50c. to 53.50c. |
| Tin, bar  | 54.50c. to 55.50c. |
| Copper, Lake  | 10.25c. to 11.00c. |
| Copper, electrolytic                                      | 10.00c. to 10.50c. |
| Copper, castings  | 9.75c. to 10.75c.  |
| *Copper sheets, hot-rolled                                | 16.00c.            |
| *High brass sheets  | 14.50c.            |
| *Seamless brass tubes                                     | 17.00c.            |
| *Seamless copper tubes                                    | 17.25c.            |
| *Brass rods   | 13.00c.            |
| Zinc, slabs   | 5.75c. to 6.75c.   |
| Zinc, sheets (No. 9), casks, 1200 lb. and over            | 10.25c.            |
| Lead, American pig  | 4.50c. to 5.50c.   |
| Lead, bar   | 5.50c. to 6.50c.   |
| Lead, sheets  | 7.50c.             |
| Antimony, Asiatic   | 11.00c.            |
| Alum., virgin, 99 per cent, plus                          | 23.30c.            |
| Alum., No. 1 for remelting, 98 to 99 per cent             | 18.00c. to 19.00c. |
| Solder, ½ and ½   | 32.00c. to 33.00c. |
| Babbitt metal, commercial grades                          | 25.00c. to 60.00c. |

\*These prices are also for delivery from Chicago and Cleveland warehouses.

| From Cleveland Warehouse<br>Delivered Prices per Lb. |         |
|--|---------|
| Tin, Straits pig                                     | 55.50c. |
| Tin, bar   | 57.50c. |

|                             |                  |
|-----------------------------|------------------|
| Copper, Lake                | 10.00c.          |
| Copper, electrolytic        | 10.00c.          |
| Copper, castings            | 9.75c.           |
| Zinc, slab                  | 5.75c. to 6.00c. |
| Lead, American pig          | 4.75c. to 5.00c. |
| Lead, bar                   | 7.75c.           |
| Antimony, Asiatic           | 9.00c.           |
| Babbitt metal, medium grade | 18.50c.          |
| Babbitt metal, high grade   | 59.50c.          |
| Solder, ½ and ½             | 33.25c.          |

**Old Metals, Per Lb., New York**  
Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

|                                     | Dealers' Buying Prices | Dealers' Selling Prices |
|-------------------------------------|------------------------|-------------------------|
| Copper, hvy. crucible               | 5.62½c.                | 6.37½c.                 |
| Copper, hvy. and wire               | 5.50c.                 | 6.00c.                  |
| Copper, light and bottoms           | 4.50c.                 | 5.00c.                  |
| Brass, heavy                        | 3.00c.                 | 3.62½c.                 |
| Brass, light                        | 2.25c.                 | 3.00c.                  |
| Hvy. machine composition            | 4.25c.                 | 4.87½c.                 |
| No. 1 yel. brass turnings           | 4.25c.                 | 4.87½c.                 |
| No. 1 red brass or compos. turnings | 4.00c.                 | 4.50c.                  |
| Lead, heavy                         | 2.75c.                 | 3.12½c.                 |
| Zinc                                | 2.00c.                 | 2.37½c.                 |
| Cast aluminum                       | 9.62½c.                | 10.75c.                 |
| Sheet aluminum                      | 11.00c.                | 12.50c.                 |

## Eastman Makes Railroad Scrap Study

WASHINGTON, Oct. 30.—Looking to the elimination of waste in the handling and sale of iron and steel and non-ferrous scrap, Joseph B. Eastman, federal coordinator of transportation, announced yesterday that on Oct. 26 he addressed an inquiry to the railroads of the country from which it is hoped to solve the problem with resulting efficiency. Details, such as location of scrap plants, size, capacity, facilities used, and kind of operations performed are embraced in the broad inquiry. When returns are received they will be laid before railroads for the purpose of giving them a more complete and authoritative picture of their scrap handling operations than has ever before been available.

Specifically the purpose of the inquiry, it was stated, is to develop information on: (1) the costs of handling and preparing scrap for the market and the net revenue accruing to the carriers through the sale of scrap; (2) the advantages and disadvantages of dismantling equipment versus sale "on wheels," or dismantling by outside agencies; (3) the possibilities for economy through the establishment of central scrap plants to serve two or more roads, and (4) the relative position of the railroads as scrap producers.

Estimates of the total tonnage of scrap produced annually by the railroads vary from 3,000,000 to 4,500,000. It was pointed out that it originates in the form of miscellaneous parts and worn out and obsolete equipment. Some of it, such as rails, wheels, axles, bridge materials, etc., is shipped direct from point of origin, while the remainder is collected at scrap sorting plants, where it is sorted and prepared before shipment. Scrap equipment is sold "on wheels," dismantled, or sold under one of a variety of agreements whereby the purchaser returns parts, holds part for re-purchase, etc. In some instances the dismantling work is done under contract, the road retaining the resulting scrap and usable parts.

The inquiry will develop information on the total amount of scrap originated by the railroads for five years, 1929 to 1933; the amount shipped direct from point of origin and the amount handled through scrap sorting plants, for both ferrous and non-ferrous metal scrap. The amount of each class of prepared scrap shipped during 1933 and the market into which it moved will be determined, together with the money received for the scrap.

Because of the effect of freight haul on price, the ton-miles of haul, both free and revenue, and the freight

# WYCKOFF COLD DRAWN STEELS NU-SPEED NO. 1 BESSEMER SCREW STOCK NO. 2 BESSEMER SCREW STOCK

To meet the ever increasing production speeds of automatic screw machines,—Wyckoff has developed and perfected two grades of Bessemer Screw Stock that ideally meet these requirements.

Nu-Speed Bessemer is always clean, sound and consistently uniform in grain structure,—important reasons for its extensive use by the leading manufacturers of automatic machine parts.

Let Wyckoff cooperate with you.

## WYCKOFF DRAWN STEEL COMPANY

General Offices: First National Bank Bldg., Pittsburgh, Pa.

Mills at Ambridge, Pa. and Chicago, Ill.

Manufacturers of

Cold Drawn Steels

Turned and Polished Shafting

Turned and Ground Shafting

revenue received are given place in the inquiry.

The number of locomotives and cars dismantled, sold "on wheels," and sold under other agreements, together with total weight, terms of sale and money received, is also requested.

"There is wide variation in what meager information is at present available on the cost of scrap plant and dismantling operations," it was stated. "The inquiry contains well defined questions dealing with those items which will secure figures on the individual features of cost and will develop comparable figures."

## September Babbitt Metal Production Down

WASHINGTON, Oct. 30.—The production of babbitt metal in September declined to 1,653,258 lb., from 1,856,284 lb. in August, according to the Bureau of the Census. Of the September output, 1,273,236 lb. was sold and 380,022 lb. was produced for the manufacturers' own use. In the first nine months of the current year production of babbitt metal aggregated 19,590,674 lb., compared with 17,299,231 lb. in the corresponding period of last year.



# BE SURE TO READ THE *P.T.C.* SPREAD

ON PAGES 92-93

▼ We are members of the Power Transmission Council and will gladly send you the data offered. Or better still, let us know the type of plant in which you are interested and we will send you an analysis of transmission equipment for that type; and some additional data of value, on Schieren Belting and how it will help you materially reduce your power costs. Write to . . . . .

## AN IMPORTANT FACTOR IN THE

Life of belts on any type of drive is PLIABILITY. MANY Schieren Belts are still giving excellent service after 30 and 40 years' use because of their extra pliability—due to Schieren-izing, which gives all Schieren Belting extra power transmitting capacity . . . . .



**SCHIEREN-IZING** makes leather belting pliable

## Labor Clause To Be Discussed In Automobile Code Renewal

**D**ESPITE the demands made by the American Federation of Labor for a 30-hr. week, elimination of the merit clause and other alterations in the automobile manufacturers' code, it is believed that NRA will renew the code, which expires Nov. 3, virtually without change. However it is thought that the Government will be compelled to reopen discussion of the code's labor provisions in order to pacify the American Federation of Labor, which has induced the NRA Labor Advisory Board to demand a hearing on suggested changes.

Automobile manufacturers are prepared to fight to the last ditch against any further concessions to labor which will increase their already high production costs. The point is that hourly wage rates already are in most cases above 1929 levels and reductions in maximum hours have necessitated employment of more workers than formerly were required. This fact is strikingly illustrated by figures for September. Total output of the industry in September was 174,451 units compared with 197,608 in the same month a year ago. Yet on Sept. 15 automobile companies in Michigan employed 213,738 workers whereas on the same date in 1933 the number was 185,157. Moreover, the average weekly earnings last month were \$23.13 as against \$22.04 in the corresponding month of last year.

The industry would like to see the President's agreement of March 25

carried out. Contrary to later decisions of the National Labor Relations Board in favor of majority representation in collective bargaining the President's agreement declares in favor of proportional representation. It is understood that car manufacturers would like to see the Automobile Labor Board formulate rules as soon as possible governing proportional representation and would not be averse to establishment of employees' councils in various plants the members of which would be the spokesmen for diverse groups. In other words, a council might consist of representatives of the A. F. of L. United Automobile Workers' Union and present employee associations, as well as perhaps of other workers' groups. Manufacturers are willing to gamble on the possibility that the A. F. of L. might get a majority of the council membership in certain plants. The industry's main concern is not that the A. F. of L. might be in the majority here and there but that its dealings in collective bargaining be with its employees and not with outside self-appointed spokesmen for its workers.

General Motors Corp. recently mailed to its employees copies of a pamphlet setting forth its views on relations with employees and pledging itself to collective bargaining in composing differences. The message points out that every employee's complaint should be considered promptly by his superior officer and the door is left open for the employee to go to the

highest authority in the company if necessary to secure a satisfactory decision. To give its 3000 foremen a true conception of the enlightened attitude of management toward labor General Motors is conducting classes for foremen under the supervision of some 60 instructors. This sympathetic and co-operative attitude of General Motors in labor matters has met with wide favorable editorial comment and has put the corporation in a strong position. It is well known in Detroit that the A. F. of L. is waiting only until production turns up again and employment increases to present fresh demands to some companies with a strike threatened if they are not met. A militant union policy usually results in a temporary growth in membership.

## Reinforcing Steel

**Awards 1550 Tons—New Projects  
8800 Tons**

Chicago, 275 tons, Sanitary District, to Inland Steel Co.

St. Louis, 320 tons, substructure for post office, to Laclede Steel Co.

Donaldson, Ark., 200 tons, bridge to Arkansas Foundry Co., Little Rock, Ark.

Multnomah County, Ore., 100 tons, State highway bridge, to Truscon Steel Co.

San Jose, Cal., 470 tons, auditorium, to Soule Steel Co.

San Francisco, 184 tons, psychopathic building, to Gunn-Carle Co.

### NEW REINFORCING BAR PROJECTS

Dennis-Yarmouth, Mass., 270 tons, State bridge.

Grafton, W. Va., 1400 tons, for Tygart River dam; general contract awarded to Frederick Snare Corp., 114 Liberty Street, New York.

Zanesville, Ohio, 500 tons, for Muskingum watershed conservancy district.

Cleveland, 230 tons, Lorain Avenue bridge; bids Nov. 16.

Waverly, Ohio, 160 tons, Pike County highway bridge.

Milwaukee, 4000 tons, filter plant; bids out this week.

Lockport, Ill., 115 tons, Sanitary District.

Muscatine, Iowa, 1280 tons, dam across Mississippi River.

Fremont County, Colo., 104 tons, State highway bridge; bids Nov. 7.

Long Beach, Cal., 1400 tons, improvement of Naples, Rivo Alto and Colonnade Canals; appropriation made and plans completed.

Beverly Hills, Cal., 150 tons, medical office building; general contract awarded.

Long Beach, Cal., 100 tons, alterations to Polytechnic High School, general contract awarded.

## Railroad Equipment

Waco, Beaumont, Trinity & Sabine is seeking a PWA loan of \$260,000 for additional motive power and repairs to its line.

Lehigh Valley is inquiring for three Diesel electric locomotives.

Chesapeake & Ohio has ordered three pusher locomotives from Atlas Car & Mfg. Co.

Lehigh Valley is inquiring for 250 mill-type gondola cars.

### RAILS

Norfolk & Western is in the market for 10,000 tons of 131-lb. rails and 4000 kegs of spikes.

## Steel Institute Protests Lowering Of Tariffs

**I**N a protest against any reduction in duties on iron and steel imports from Belgium filed with the United States Tariff Commission Monday, the American Iron and Steel Institute declared that such imports "constitute a serious menace" to the steel industry in this country and are detrimental to American workmen.

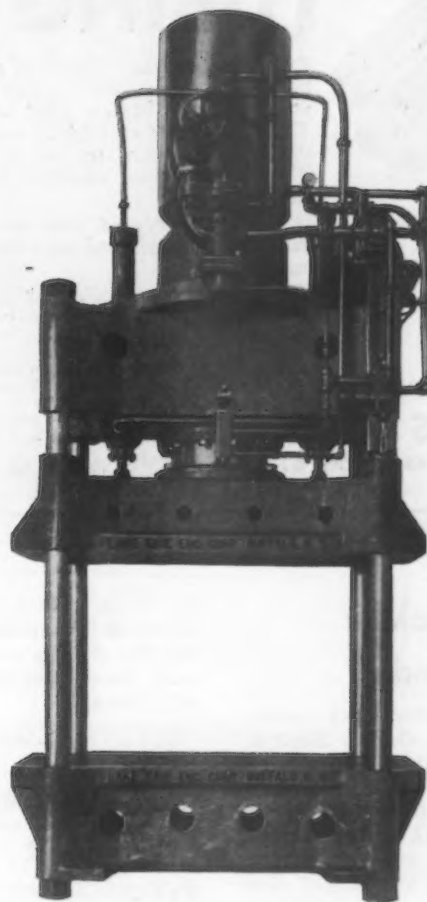
"The low labor costs of European steel producers compared with the much higher labor costs prevailing in the United States enable the European producers to ship their products into markets along the Atlantic, Gulf and Pacific Coast seaboard of the United States and even to penetrate markets in the interior of the United States at delivered prices close to or below the cost of production of similar products made by domestic steel producers," the statement says.

"The present basic rate of wages in the Pittsburgh, Youngstown, Cleveland and Chicago districts for common labor in the steel industry is 47c. per hour. The average hourly wage actually paid in August, 1934, in the United States under the Steel Code to all employees receiving hourly, piecework or tonnage rates was 63c. per hour. If all employees including salary and wage earners are included, the average actually paid was 72c. per hour. According to the best information available, the highest wage rate for common labor in any European steel making country does not exceed 30c. per hour.

"In the production of a ton of steel, approximately five tons of raw materials such as iron ore, coal, limestone, etc., are required and the transportation of such materials is a most important source of revenue to railroads serving the various steel producing districts. When foreign steel products are imported, the American railroads secure the transportation only of the tonnage of steel so imported and, in fact, get no transportation of any sort in the event that the foreign steel is purchased for consumption at seaboard points."

The institute's statement, authorized by the board of directors, was signed by Walter S. Tower, executive secretary, and formally protests any reduction in import duties on Belgian iron and steel products under trade reciprocity agreements now under negotiation at Washington. Under "most favored nation" treaties, a change in Belgian duties would apply to most other European steel producing countries.

## LAKE ERIE'S LATEST HIGH SPEED HYDRAULIC PRESS



The press illustrated is giving unusual satisfaction in one of the country's largest airplane plants.

Similar presses are operating successfully in the plants of Molders of Plastic Products, and the manufacturers of Electrical Equipment, of Mechanical Refrigerators, etc.

Note the self contained motor driven unit, providing a speed of 20 strokes per minute, with highly sensitive and accurate control.

**LAKE ERIE ENGINEERING CORP.**  
68 KENMORE STATION, BUFFALO, N. Y.

## Pipe Lines

**Kentucky Public Service Co.**, Elizabethtown, Ky., John N. Ashcraft, secretary, plans 4 and 6-in. welded steel pipe lines in part of Barren and Hardin Counties, about 78 miles, for natural gas service.

**Bender Syndicate**, R. Bender, 81 Herkimer Road, Utica, N. Y., head, plans steel pipe lines at Camden, N. Y., and vicinity, for gas distribution. Cost about \$40,000.

**Upland, Cal.**, closed bids Oct. 23 for 7920 ft. 14-in. steel pipe, 3/16-in. thick, with alternate bids on same quantity of 8, 10 and 12-in. steel pipe for water supply.

**Troy, Ala.**, asks bids until Nov. 15 for 40,429 ft. of 3/4, 1 and 1 1/4-in. galvanized steel pipe for new butane gas distribution system;

also for 58,161 ft. of 2, 3 and 4-in. cast iron pipe for similar service. Charles H. McKeand & Associates, Troy, are consulting engineers.

**Pageland, S. C.**, closes bids Nov. 6 for 19,200 ft. of 1 1/2 and 2-in. galvanized pipe for water system; also for quantity of 4, 6 and 8-in. cast iron pipe and 75,000-gal. elevated steel tank on 100-ft. tower. Harwood Beebe Co., Spartanburg, S. C., is consulting engineer.

**City Gas Co.**, London, Ont., plans steel pipe lines for extensions and improvements in gas distribution system, including main high-pressure line from natural gas fields to city limits for changing local service from artificial to natural gas for industrial and commercial use; also new plant facilities for handling and distributing natural gas. Cost close to \$1,000,000. Special election will be held on Dec. 3 for municipal approval of project.



## NON-SHRINK, OIL HARDENING TOOL STEEL TUBING



The job of making ring dies, cutting dies, bushings spacers, etc., is half done when you start with Bissett Tool Steel Tubing. There is a size carried in stock to meet every requirement up to 12" O.D. and 2" wall thickness. Larger sizes can be supplied.

It eliminates forging, does away with annealing difficulties and cuts down machining cost.

We also supply special tubing to S.A.E. 52100 and S.A.E. 4615 analysis for Ball Bearing purposes.

*Manufacturers of BISCO Tungsten Carbide and Tantalum Carbide drawing dies for wire, rod and tubing.*

**THE BISSETT STEEL COMPANY**

945 E. 67th STREET, CLEVELAND, O.

Cincinnati

Philadelphia

## Outfit for Machine Or Hand Grinding

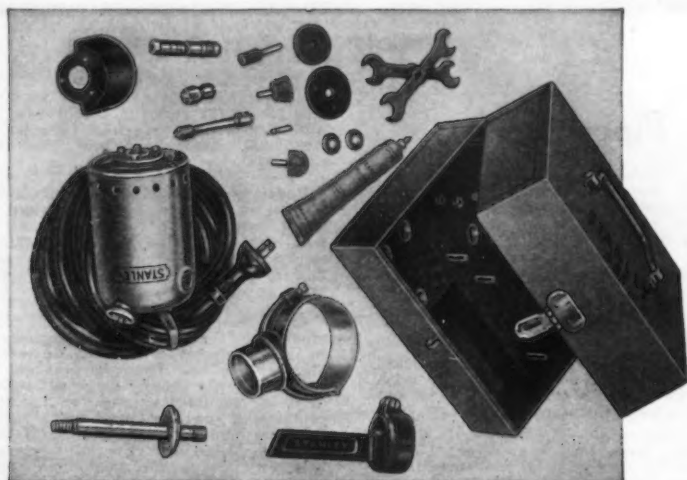
THE tool-room grinder, here shown, a new item by the Stanley Electric Tool Co., New Britain, Conn., can be mounted in a lathe, miller or shaper or in a special Stanley bench stand. A variety of abrasive wheels, either straight or mounted, may be used to grind the openings in all kinds of dies and jigs, grind keyways and slots and other internal and external grinding operations. It is adaptable as a hand tool to grind machine parts and to rough off-hand grinding on small castings or forgings. With a metal cutting bit it can be used to machine aluminum patterns, brass templets and for similar work on all non-ferrous metals.

A  $\frac{3}{4}$ -hp. 18,000 r.p.m. universal motor, capable of driving a 1 $\frac{1}{2}$  in.

by  $\frac{1}{2}$  in. wheel, is employed. The complete equipment, designated as the No. 585, is contained in a metal case, convenient for carrying or for crib storage.

## Scrap Advances At Detroit

DETROIT, Oct. 30.—A shortage of scrap caused by low automotive production and the desire of dealers to cover short orders have had the effect of strengthening prices of old material. A number of items, including heavy melting steel, borings and short turnings, hydraulic bundles and low phosphorus plate scrap have advanced 25c. a ton, while sheet clippings and flashings are up 50c. Scrap lists coming out of automobile plants are bringing considerably more than



in September. Although Ford is not in the market for scrap, the threat that it might find it necessary to purchase steel items, at least temporarily, is helping bolster prices. Consumers are not yet paying higher prices for scrap, being content to take in what is due them in old contracts and refraining from making fresh purchases.

## Destroyer and Submarine Steel Bids to Be Opened

COMPLETING its steel buying program for eight destroyers and three submarines it is to build in its own navy yards, the Navy Department has announced the opening of bids on Nov. 16 for 4404 tons of plates, shapes, sheets, bars and strip. These tonnages round out the department's requirements for these two types of ships in the new navy building program. Bids on the first lot of steel will be opened Friday of this week when tenders will be received for 4432 tons of plates and 348 tons of steel bars and strip for the eight destroyers. This latter opening formerly was set for Oct. 12, but was postponed. It has attracted considerable attention as a possible test of code prices and of the executive order of June 29 when the President said that bidders on Government business might submit prices as low as 15 per cent below code prices without violating codes. The Nov. 16 opening will involve 1700 tons of shapes for eight destroyers and 2400 tons of plates, 289 tons of shapes and 15 tons of sheets for the three submarines.

Announcement is expected soon of date for receiving bids for steel for one light and one heavy cruiser to be built at the New York and Philadelphia yards respectively, calling for approximately 1200 tons of steel, principally plates.

## C. E. Stuart Resigns Presidency of Tyson

CHARLES E. STUART, president and treasurer of Tyson Roller Bearing Corp., Massillon, Ohio, resigned as of Nov. 1, after five years spent in organization and operation of the plant. He will remain on the board of directors. RUSSEL E. COLGATE, who has been chairman of the board, has been elected president and treasurer succeeding Mr. Stuart. RALPH H. MAXSON is executive vice-president in charge of operations, GEORGE C. McMULLEN is vice-president in charge of sales, GEORGE NEUPOWER, secretary, and E. R. EARNEST, assistant treasurer and purchasing agent. The reorganization of executive personnel follows closely upon additions to the field sales force, and the installation of new production equipment which more than doubled the plant's capacity.

## Railroad Coordinator Surveying Light Weight Car Possibilities

**W**ASHINGTON, Oct. 30.—The possible use of aluminum and stainless steel freight cars, drawn by Diesel engines, is one of the methods being studied in connection with plans for coordination of railroad activities to eliminate unnecessary waste of competition with a view to a possible saving of \$35,000,000 to \$50,000,000 a year, according to Joseph B. Eastman, Federal coordinator of transportation. Addressing 300 railroad and Government officials, army officers and others at the quarterly dinner of Chamber of Commerce of Alexandria, Va., last week, Mr. Eastman outlined suggestions he will submit to Congress and declared he anticipated the setting up of a scientific bureau to assist in eliminating waste.

He also mentioned the proposal to load truck bodies on freight cars, hauling them to a point near their ultimate destination and then transferring them for final delivery. Mr. Eastman said that direct-drive cars, using the same means of propulsion as automobiles, are being considered. Another proposal out of the lengthy list mentioned was the setting up of purchase review boards.

Mr. Eastman declared that labor objections and the objection of communities who believe themselves threatened economically if shops and yards are coordinated are chief obstacles at present to plans of coordination.

Meanwhile, Mr. Eastman reported on the car pooling plan, suggesting that the carriers of the country pool their 2,500,000 box cars under the recently created Association of American Railroads. It was estimated the plan would result in an annual saving of \$100,000,000. The report, submitted by Mr. Eastman to the railroads, said that waste has increased progressively to the point that the annual "excess" empty-car mileage is now more than 2,000,000,000 miles. The ratio of empty-car mileage to loaded mileage was declared to have risen from 47 per cent in 1920 to 64 per cent as the result of a "competitive rush to shift the burden of car hire."

The value of saws made in 1933 amounted to \$8,111,852, f.o.b. factory, compared with \$9,471,135 for 1931, according to the Bureau of the Census.

# ARMSTRONG



announces the  
new B-35  
General Catalog

244 Pages of Quality Tools

## ARMSTRONG

TOOL HOLDERS  
—For Lathes, Planers,  
Shapers  
\*TURRET LATHE  
TOOLS  
HIGH SPEED STEEL  
CARBIDE CUTTERS  
LATHE DOGS  
CLAMPS

RATCHET DRILLS  
OPEN END WRENCHES  
\*SOCKET WRENCHES  
\*RATCHET WRENCHES  
\*STAR DRILLS  
MACHINE SHOP SPECIALTIES

## ARMSTRONG BROS.

STOCKS AND DIES  
\*RECEDING PIPE  
THREADERS  
PIPE CUTTERS

\*PIPE REAMERS  
PIPE VISES  
PIPE TONGS  
PIPE WRENCHES

\*Indicates New Lines shown for first time.

Write for your copy today

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

309 N. Francisco Ave., Chicago, U. S. A.  
New York Sales Office: 109 Lafayette Street

## Plant Expansion and Equipment Buying

### ◀ MICHIGAN DISTRICT ▶

Standard Foundry Co., General Motors Building, Detroit, manufacturer of gray iron castings, etc., has leased foundry formerly operated by Morris Birnbaum, Wyandotte, Mich., for branch plant for regular line of automobile castings.

Rishel Electric Appliance Co., 501 Jacobs Street, Sturgis, Mich., has been organized by Lewis M. Rishel, Sturgis, and associates, capital \$650,000, to manufacture electrical appliances and equipment.

Postum Co., Battle Creek, Mich., has let general contract to James Stewart Corp., 343 South Dearborn Street, Chicago, for two new grain elevators. Cost about \$125,000 with elevating, conveying, screening and other mechanical equipment.

Sparta Coach & Body Co., Sparta, Mich., recently organized by Erastus W. Smith and associates with capital of \$140,000, has purchased former local plant of Grand Rapids Store Equipment Corp., and will remodel for manufacture of commercial automobile bodies, trailer coaches, automotive parts, etc. Mr. Smith will be secretary and treasurer.

### ◀ PACIFIC COAST ▶

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 9 for 11,375 lb. cast steel stud link chain and quantity of outboard swivel shot chain (Schedule 3580) for Mare Island Navy Yard; until Nov. 6, corrosion-resisting bar steel (Schedule 3602); until Nov. 13, two motor-driven engine lathes (Schedule 3644), one motor-driven toolmaker's lathe (Schedule 3646) for Puget Sound yard.

Amalgamated Sugar Co., Ogden, Utah, has selected 75 acre tract near Clarksburg, Yolo County, Cal., for new beet sugar mill, with power house, pumping plant, machine shop and other mechanical departments. Cost over \$1,000,000 with machinery. Company engineering department will be in charge.

Escondido Lemon Association, Escondido, Cal., R. G. Beck, general manager, has let general contract to J. Rex Murray, 4567 Texas Street, San Diego, Cal., for three-story and basement addition to citrus fruit packing and distributing plant, 103 x 330 ft. Cost about \$100,000 with conveying, loading, air-conditioning and other equipment.

### ◀ FOREIGN ▶

Hughes-Mitchell Processes, Inc., 1461 Griffith Avenue, Los Angeles, has let contract to Consolidated Steel Corp. for two new buildings for chemical processing service at plant now being established in San Pedro district. Cost over \$60,000 with machinery.

Charles Churchill & Co., Ltd., Birmingham, England, manufacturer of machine tools, has acquired 3-acre tract for one-story plant unit, totaling about 40,000 sq. ft. for assembling and testing departments. Cost close to \$100,000 with tools and equipment.

Gilby Wire Societe Anonyme, 11 bis Rue d'Aguesseau, Paris, France, has recently been organized as a subsidiary of Gilby Wire Co., 152 Riverside Avenue, Newark, N. J., and will operate plant at 76 Boulevard Richard Wallace, Puteau, France, for manufacture of resistance wires and other wire products. Gabriel Fodor, formerly European manager of Gilby company, will be manager of new interest.

Commissariat of Heavy Industry, Soviet Russian Government, Moscow, plans new electrolytic copper works, including refinery, near Pyshminsk, Russia. Cost over \$500,000 with machinery. Amtorg Trading Corp., 261 Fifth Avenue, New York, is official buying agency.

National Coke & Oil Co., Cardiff, South Wales, England, has purchased 10-acre tract for new oil refinery to operate under a special process for producing oil from slack. Cost over \$300,000 with equipment.

The Yates-American Machine Co., Beloit, Wis., large manufacturer of woodworking machinery, has entered into the manufacture of heat transfer units of all types, including a full line of unit heaters for heating purposes, also automotive radiators. During the past four months an entire building has been equipped and production started on radiators for automobiles, trucks, tractors, road machinery and industrial units. Unit heaters for heating purposes, condensers, evaporators and fin coils for air conditioning and refrigeration and other heat transfer units are also being produced.



**Any Shape in WIRE!**

**E. F. Fitchner & Co.**  
200-206 WALNUT ST. BINGHAMTON, N.Y.

**WIRE STAPLES ALL SIZES**

## Foundrymen Review Practical Problems

(Concluded from Page 33)

viewed the effects of various elements present in yellow brass, such as copper, zinc, tin and lead. He also outlined the effects of such deoxidizers as aluminum, silicon, manganese, phosphorus, lithium, calcium, etc., with regard to the formation of oxides that may be present in the melt. Under degasification, the author gave three sources of gases in castings and pointed out the importance of the solubility of these gases at pouring temperatures and in the solid metal.

The author's conclusion was that the best method of degasification probably is pouring the metal at as low a temperature as possible.

The yellow brass which the author considered is brass of not more than 75 per cent copper, consisting essentially of copper and zinc but with a permissible addition of lead, tin and small amounts of other elements.

It was first considered what oxides can be present in yellow brass. The first mentioned was copper oxide, or more properly cuprous oxide. Zinc is a very powerful reducing agent, and there is no doubt that it can and does reduce any cuprous oxide that may be present.

If cuprous oxide is not present then zinc oxide may be. Zinc is readily oxidized under ordinary melting conditions, but zinc oxide does not dissolve readily in brass and therefore if it is present most of it is simply mechanically entrapped.

Tin may be in the melt, and any tin oxide in the melt will be present because of oxide already on the tin before adding it to the brass. The amount of tin oxide present is probably negligible.

Lead is another minor constituent that is frequently present. This oxide might be retained in the melt as physically entrapped particles much as zinc oxide is. It is believed, however, that the amount present is negligible.

Oxides of deoxidizing agents used may be present. When using aluminum, silicon or manganese, the oxides certainly are retained and in some cases seriously affect the quality of the castings.

Mr. Ward pointed out that it is a well known fact that brass castings in which aluminum is used as a deoxidizer are unsound, and fractures of these castings often show quite large particles of aluminum oxide present. Silicon also is oxidized and the oxide is retained in the casting as finely divided silicon oxide. The oxides of both aluminum and silicon, if present in the casting, will make the brass difficult to machine and necessitate frequent grinding of tools.

Manganese is often used as a brass deoxidizer and in many cases it proves useful. However the oxide is sometimes retained and adversely affects the brass. The suitable deoxidizers of brass then are only phosphorus, lithium and calcium and some

others. Phosphorus when oxidized passes out of the metal as a gas. Little work has been done on the use of lithium or calcium.

The author summed up the question of the deoxidation of brass by saying that deoxidation, as founders usually think of it, is unnecessary. With the amount of zinc that is present, it is impossible to have any copper oxide present and none of the common deoxidizing agents would reduce the oxides of zinc, lead and tin that would be present. This being true, what is the actual function of the common deoxidizers? For the most part they are what might be termed fluidizers.

Both phosphorus and aluminum increase the fluidity of the molten brass, and the metal takes a much sharper impression in the mold. Silicon also has this same influence.

One method of deoxidation that is most important is the proper control of melting condition and the protection of the metal during melting by slags or charcoal. Sound castings with a minimum of oxide inclusions can be made using any of the commercial melting furnaces if controlled properly. The atmosphere should be kept neutral or slightly reducing and the charge should be added only as fast as it can be melted with the proper protection.

Concerning the study of degasification, Mr. Ward considered the effects of hydrogen, steam, air, nitrogen, carbon monoxide, carbon dioxide and methane. Any gases present in the castings are from one of three sources, namely, those present in the charged metal, those dissolved during melting, and those entrapped in the molten metal in the mold.

Air is referred to as one of the important gases with which founders have to contend. Too violent stirring of the metal in the pot before pouring or too turbulent a stream in pouring will entrap air.

To degasify brass, then, the founder must not look to abstruse or difficult procedures but rather must examine the obvious but often overlooked details. Care should be taken in melting to keep the atmosphere neutral or slightly reducing and to protect the metal from the flame by some covering material so far as possible. Mold design and pouring conditions should be studied to avoid entrapping gases in the metal and to give them a chance to escape.

The temperature should be kept as low as possible to lower the solubility of gases in the metal. The effect of temperature on the formation of blow holes can clearly be seen in Fig. 3.

## Specialty Selling

(Concluded from Page 22)

had no particular engineering problems, were not receiving the attention that they deserved.

Here's how that company licked this difficulty: It placed its salesmen, who had been traveling all over the country, in definite territories. That is, it made them sell geographically instead of industrially. They call on any and all industries within their territories. These men garner in the routine orders, the bread-and-butter business, the day-to-day purchases, which constitute the larger portion of the company's volume.

### Even the President Sells

In the meantime, this manufacturer's specialized selling is done by its executives. Seventeen men who are high up in the counsels of the organization are obliged to devote some of their time to selling. Even the president has to hit the road periodically. His job is to contact big customers occasionally. By calling on them he inferentially lets them know that the company regards their business as important enough to justify the president, himself, in paying them a visit. The salesmanager holds himself in constant readiness to go into any territory to help his men handle a difficult situation. The production manager, the chief engineer and his various assistants are specialists in certain industries, capable of handling any problem that may come up in these fields. Every one of the seventeen men is an expert in his line and can give specialized sales assistance to the province that he covers.

These traveling executives shoot trouble. They open up new industries for anti-friction bearings. They look for new applications for bearings, and help their prospects to develop these applications properly. In a word these men are anti-friction bearing specialists.

The foregoing case makes clear the essential difference between a specialty salesman and a regular salesman. It is that the former concentrates on something—on a single product, on an especial type of selling, on a definite class of trade or on certain industries, or on solving problems, etc. The general salesman is a sort of a jack-of-all-trades, whereas the specialty man is an expert in some line of work.

In the case of the steel industry, itself, there has been a pronounced tendency toward specialization in selling methods for several years, particu-

## A New DAVIS KEYSEATER Tilting Table Type



The outstanding feature of this new machine is the tilting table which may be set at any angle required for cutting straight or tapered keyways in bores tapering up to 3" per foot.

The cutter remains vertical at all stages of the operation, making it easy to set up the work.

The table is hand fed by a lever at the front, an adjustable stop being provided to limit the depth of cut.

The same broach type cutters are used as in the older machines of fixed table type.

Built in three sizes to cut keyways from 1/16" to 1 1/2" in width. Send for circular giving complete details.

**DAVIS KEYSEATER COMPANY**

400 Exchange Street

ROCHESTER, NEW YORK

larly during the depression. For the most part the specialty effort here consists in adapting the steel product to the customer's needs. In this the steel business has been profiting from the experience of similar industrial lines, which have been doing specialty marketing for a much longer period.

Suffering from the aggressive competition of other metal producers, and of the sponsors of other materials that are successfully horning in on the markets long enjoyed almost exclusively by steel, the steel mills have been obliged to intensify their selling efforts. To an extent, they have been obliged to stop selling steel as steel, and to sell it for what it will do. Less effort is being put on tonnage selling and more on the promotion of special analyses and special purpose steels.

Much of this sales endeavor consists of showing the customer how to use steel. Salesmen—engineers and salesmen—metallurgists show their prospects how the use of steel will solve their production problems. The paper, tobacco, soap, food, textile, leather, automotive, farm machinery and numerous other industries always have some sort of a production difficulty on hand. If it can be demonstrated convincingly that steel can be used more satisfactorily than the material now being used, it is certain that steel will get that producer's business. The steel industries, I believe, are destined to extend this type of selling. Specialty selling gets closer to the market; it entrenches itself better with customers than general selling, and in the long run it is

more profitable, for the simple reason that it runs up a larger volume of the profit-bearing kind of sales. The steel industry is only learning now what has been known in other industries for many a year.

Continuous-tooth herringbone speed reducers and gears are covered in catalog No. 137 recently issued by the D. O. James Mfg. Co., Chicago. Over 90 pages are given to specifications, working data, engineering information and illustrations of many installations. Space is also given to flexible couplings, the James combination automatic backstop and flexible coupling and universal couplings.

E. I. Du Pont de Nemours & Co. have awarded the Koppers Construction Co. a contract for a Thylox process liquid purification plant to be built at Belle, W. Va. This plant, which will be the largest of its type in the world, is designed to purify blue gas and to remove 99 per cent plus of the hydrogen sulphide contained in this gas. The plant will have a capacity to purify 45,000,000 cu. ft. of gas per day.

**Are Welding.**—The Lincoln Welding Co., Cleveland, Ohio. A large illustrated booklet describing the shielded arc process of welding. Many welds are described, and tensile strength, ductility, fatigue and corrosion resistance and density of the welds are given.

**Centralized Lubrication.**—The Farval Corp., Cleveland, Ohio. A large booklet showing photos and operating data on all types of rolling mills and auxiliary steel mill equipment.





## PLANT EXPANSION AND EQUIPMENT BUYING

### Machine Tool Sentiment Improves On Better Inquiries

**S**ENTIMENT in machine tool and shop equipment circles has taken a turn upward within the last week, based somewhat more upon increased inquiries than upon actual orders.

The fact that Ford is preparing to spend \$11,000,000 for new equipment in addition to the millions that will be required for his new steel capacity has been one of the bullish features, seconded by the news that Packard will probably require another half million dollars' worth of equipment to complete its retooling program. (This company has just negotiated for gear finishing equipment to the amount of \$50,000.)

An encouraging development is seen in the readiness of the market to take good used tools at high prices as indicated by the recent receivership sale of the Grigsby-Grunow Co. The willingness of consumers to pay close to 75 per cent of the original value of these tools is taken to indicate that a demand exists which will shortly affect the new tool market.

#### ◀ NORTH ATLANTIC ▶

**United States Industrial Alcohol Co.**, 60 East Forty-second Street, New York, affiliated with Air Reduction Co., Inc., same address, will carry out expansion and improvements in plant at Curtis Bay, Baltimore, to cost over \$500,000, including equipment. A new power plant will be built. **Barney-Ahlers Construction Corp.**, 110 West Fortieth Street, New York, is contractor.

**Superintendent of Lighthouses**, St. George, Staten Island, N. Y., asks bids until Nov. 5 for 736 15-fathom pieces open-link wrought iron buoy chain,  $\frac{3}{4}$  to 1 $\frac{1}{2}$  in. diameter, and 272 bridle chains (Proposal 47327); until Nov. 7, 68 various classes can, nun and cone buoys, six fixed counterweight bell buoys and one whistle buoy (Proposal 47333); until Nov. 8, 34 15-fathom pieces open-link wrought iron buoy chain,  $\frac{1}{2}$  to 1 $\frac{1}{2}$  in. diameter, and two bridle chains (Proposal 47325).

**Commissioner of Mental Hygiene**, State Office Building, Albany, N. Y., asks bids until Nov. 14 for new power house at Pilgrim State Hospital, Pine Aire Station, L. I. Cost over \$100,000 with equipment, service lines, connections, etc. State Department of Architecture, address noted, William E. Haugaard, commissioner, is architect.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Nov. 6 for four motor-driven crank shapers and spare parts (Schedule 3609), 85,000 lb. medium steel plates (Schedule 3662); until Nov. 9, steel forgings for turbine rotors (Schedule 3628) for Brooklyn and Philadelphia navy yards; 31 electric searchlights and spare parts (Schedule 3608) for Brooklyn and Sewall's Point, Va., yards; until Nov. 13, one controllable pitch propeller (Schedule 3639) for Long Island City; until Nov. 16, about 10,000 lb. steel forgings for turbine rotors (Schedule 3655) for Brooklyn and Philadelphia yards.

**Long Island Railroad Co.**, Pennsylvania Terminal, New York, has let contract to Nicholson Co., 405 Lexington Avenue, for new coal pocket at 327-67 Junius Street, Brooklyn. Cost about \$30,000 with elevating, loading and other equipment.

**Commissioner of Mental Hygiene**, State Office Building, Albany, N. Y., asks bids until Nov. 14 for new power plant at Brooklyn State Hospital, Creedmoor Division, Queens, L. I. State Department of Architecture, address noted, is architect.

**Signal Supply Officer**, Army Base, Brooklyn, asks bids until Nov. 5 for 33,000 ft. lead-covered cable and 11 reels (Circular 41), 1200 joints (Circular 39).

**National Sugar Refining Co.**, 129 Front Street, New York, has let general contract to Sobray-Whitcomb Co., 105 West Fortieth Street, for one-story addition to plant at Long Island City, 125 x 210 ft., for storage and distribution.

**Metal Package Corp.**, 110 East Fortieth Street, New York, R. L. Whittle, treasurer, manufacturer of metal boxes, cans, etc., is arranging for stock issue to total \$900,000, part of fund to be used for expansion in operations. Company is affiliated with McKeesport Tin Plate Co., McKeesport, Pa.

**New Jersey Rivet Co.**, Camden, N. J., has been organized by Thomas J. Cauley and F. Stanley Saurman, care of Elmer G. Van Name, 726 Federal Street, representative, to manufacture rivets, studs and kindred mechanical specialties.

**Board of Education**, Rumson, N. J., plans manual training department in new multi-story high school, for which general contract has been let to Ehret-Day Co., Asbury Park, N. J. Cost over \$200,000.

**Hoffmann La Roche, Inc.**, Kingsland Road, Nutley, N. J., manufacturer of industrial and other chemicals, will build six one-story additions to plant on adjoining tract, recently acquired, comprising five factory units and storage and distribution building, 85 x 115 ft. Work on three buildings has begun and other units will proceed at early date. Cost close to \$90,000 with equipment.

**Quartermaster Depot**, Twenty-first and Johnson Streets, Philadelphia, asks bids until Nov. 21 for chains and plates, 4678 gross brass grommets, 455 lb. galvanized iron rings, etc. (Circular 155).

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Nov. 6 for 200 single engine primer pumps, with shut-off cocks (Schedule 3601); until Nov. 9, 200 aircraft directional gyros (Schedule 3649); until Nov. 13, aluminum alloy tubing (Schedule 3652) for Philadelphia Navy Yard.

#### ◀ NEW ENGLAND ▶

**Keene Carriage Co.**, Malden, Mass., manufacturer of automobile bodies, plans rebuilding three-story and basement plant recently destroyed by fire. Loss about \$35,000 with equipment.

**National Power Brake Co.**, Boston, has been organized by Thomas S. Elliott and Joseph C. Brown, 532 Columbus Avenue, to manufacture mechanical appliances and equipment.

**Board of Selectmen**, Sterling, Mass., plans manual training department in new two-story and basement high school, for which bids have been asked on general contract. Cost about \$125,000. Frost, Chamberlain & Edwards, 3900 Main Street, Worcester, Mass., are architects.

**Colonial Beacon Oil Co.**, 30 Beacham Street, Everett, Boston, plans new bulk oil storage and distributing plant at East Providence, R. I. Cost over \$30,000 with steel tanks and other equipment.

**A. C. Hayden Co.**, Brockton, Mass., has been organized by Arthur C. Hayden, 25 East Battle Street, and associates, to manufacture machinery and parts.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Nov. 13 for seamless steel tubing for Boston and other navy yards (Schedule 3650).

**Remington-Noiseless Co.**, Middletown, Conn., will erect one-story addition, 60 x 120 ft.

**Dahlquist Mfg. Co.**, 44-46 West Third Street, South Boston, coppersmith, will build one-story plant, 55 x 100 ft.

#### ◀ WESTERN PENNA. ▶

**Department of Health**, City Hall, Pittsburgh, Ray P. Moyer, director, has awarded contract to Hiler Engineering Co. and Koppers Construction Co., Koppers Building, affiliated organizations, for new steel water-jacketed type municipal incinerator plant in North Side district, at \$485,000. Another award for smaller incinerator plant at Brilliant pumping station has been made to Decarie Incinerator Co., 155 East Forty-fourth Street, New York.

**Iron City Sanitary Mfg. Co.**, Zelenople, Pa., manufacturer of enamelware, will be offered at public sale by William A. Magee, Law and Finance Building, Pittsburgh, receiver, on Nov. 15. Plant consists of group of 17 buildings, including two foundries, machine shop, forge shop, power house, etc. Court has placed minimum price of \$200,000 on property.

#### ◀ BUFFALO DISTRICT ▶

**Pennsylvania Railroad Co.**, Pennsylvania Terminal, New York, and Seneca and Louisiana Streets, Buffalo, plans new coal unloading and distributing terminal in connection with coal trestle on Hamburg Turnpike, Buffalo, including elevating, conveying and other mechanical-handling equipment. Cost about \$1,500,000 with equipment.

## Improved Exide-Ironclad Batteries offer an extra saving . . .



With the introduction of the new Exide Mipor Separators, Exide-Ironclad Batteries provide even greater economy for materials handling than before. This is a statement of genuine significance, because Exide-Ironclads have always been known for their long life, low cost of maintenance and freedom from trouble.

The new separators of Exide Mipor make these Exide-Ironclad qualities outstanding. Exide Mipor is the permanent storage battery plate insulator, proved by years of field and laboratory tests to last the entire long life of an Exide-Ironclad Battery. These separa-

tors are flexible and resilient—easily able to withstand vibration under the toughest service conditions. They are immune to battery heat and unaffected by the electrolyte. That is why they make Exide-Ironclads exceptionally trouble-free, and at the same time cut maintenance costs.

Exide Mipor is vulcanized rubber, permeated with pores so numerous as to permit free diffusion of the electrolyte, and so minute as to form a barrier to the smallest particles of active material. Write for folder giving full details on Exide Mipor, the permanent storage battery plate insulator.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia  
*The World's Largest Manufacturers of Storage Batteries for Every Purpose*  
Exide Batteries of Canada, Limited, Toronto

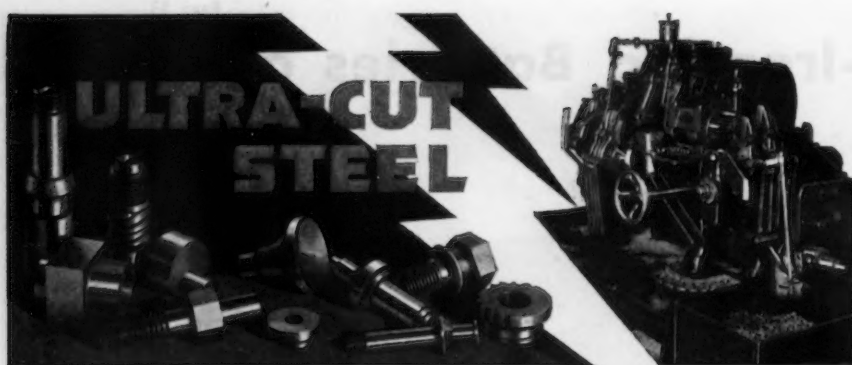


# Exide IRONCLAD BATTERIES

WITH EXIDE MIPOR SEPARATORS

"MIPOR," Reg. U. S. Pat. Off.





ARE you getting the most out of your automatic screw machines?

With Ultra-Cut, the "Ace of machining steels," you can step up your speeds and feeds, so as to obtain 30% to 40% greater production from your same equipment.

That is a conservative estimate, for higher outputs often are obtained under favorable conditions. Recent reports on the performance of Ultra-Cut Steel show 42% to 71% more pieces per hour in fabricating typical machine parts.

You can duplicate such results in your own plant and profit by the lower costs that go with higher production. Try Ultra-Cut on your machines.

Ask for your copy of BULLETIN No. 3-A, which gives technical data on Ultra-Cut Steel, including actual records of machining operations.



COLD DRAWN  
STEEL

TURNED  
SHAFTING

ULTRA-CUT  
SCREW STOCK

ALLOY STEELS

SPECIAL  
SECTIONS

## BLISS & LAUGHLIN, INC.

HARVEY, ILL. Sales Offices in all Principal Cities BUFFALO, N.Y.

Armstrong Cork & Insulation Co., 110 Washington Street, Buffalo, with headquarters at Lancaster, Pa., has leased two-story building at 329-31 Ellicott Street for new factory branch, storage and distribution plant.

United States Engineer Office, Federal Building, Buffalo, asks bids until Nov. 21 for one 25-ton whirler derrick boat (Circular 21).

Alexander H. Cowie, First Trust and Deposit Building, Syracuse, N. Y., attorney, representing group of interests whose names are temporarily withheld, is acquiring plant and assets of H. H. Franklin Mfg. Co., 302 South Geddes Street, manufacturer of automobiles, in receivership since last April, and will take over property, following sale in bankruptcy, during next 60 days. Company will be organized to operate plant for production of new air-cooled type automobile, including parts manufacture. Improvements will be made in plant and equipment.

### WASHINGTON DISTRICT

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until Nov. 23 for traction devices and equipment (Circular 71), until Nov. 16, 600 1½-ton motor gasoline trucks (Circular 66).

Oxford Shipyards, Inc., Oxford, Md., care of J. Ramsey Speer, Trappe, Md., secretary, recently organized, plans one-story boat-building and repair plant, 68 x 70 ft., for yachts, work-boats and kindred craft. Marine railway will be built. T. Hughlett Henry, Easton, Md., is one of organizers of new company.

Chief of Ordnance, United States Army, Washington, asks bids until Nov. 19 for two horizontal hydraulic broaching machines and one vertical hydraulic broaching machine (Circular 2), 26 automatic screw machines, one teatless cut-off machine (Circular 1); until

Nov. 20, 10 vertical drilling and tapping machines with mechanical feeds, two vertical drill presses, one horizontal drilling, boring and tapping machine, four radial drills, 37 sensitive drilling machines, one hydraulic ram drilling machine, 21 bench type drilling machines and one high-speed drill press (Circular 3); one automatic gear-hobbing machine, one helical gear shaper, two high-speed helical gear shapers, one 2-in. tooth rounding machine, two gear-hobbing machines and one bevel gear generating machine (Circular 7).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Nov. 6 for bare resistance wire, fuse wire, copper ribbons, etc. (Schedule 3619); until Nov. 9, lathes (Schedule 3465), centrifugal pumps (Schedule 3481), wire rope and seizing strand (Schedule 3631) for Eastern and Western yards.

### SOUTH ATLANTIC

Sowega Fertilizer Association, Valdosta, Ga., affiliated with Sowega Melon Association, has plans for one-story commercial fertilizer plant. Cost over \$40,000 with equipment.

Emmett Nicholson, Inc., Winter Park, Fla., manufacturer of citrus fruit packing machinery and parts, plans extensions, including installation of machine tools and other machine shop equipment, welding apparatus, sheet metal-working machinery, wood-working machinery, metal stamping equipment, conveyors, variable speed controls and other equipment.

Federal Emergency Administration, office of J. H. Johnston, Citizens' Southern Bank Building, Atlanta, Ga., State engineer, asks bids until Nov. 20 for new State prison buildings near Reidsville, Ga., including power house, waterworks system, sewage disposal plant and other mechanical departments. A machine shop will be built. Entire project will cost about \$1,300,000. Tucker & Howell, Rhodes-Haverty Building, Atlanta, are architects, and Newcomb & Boyd, Walton Building, mechanical and electrical engineers.

### OHIO AND INDIANA

Truck Engineering Corp., 1802 East Thirty-eighth Street, Cleveland, manufacturer of motor truck equipment, has let general contract to A. M. Higley Co., 2036 East Twenty-second Street, for one-story addition, 67 x 70 ft. Cost about \$25,000 with equipment.

Department of Public Works, Canfield, Ohio, will ask bids soon for pumping machinery and auxiliary equipment, steel standpipe, pipe lines, etc., for municipal water system. Fund of \$70,000 has been arranged through Federal aid. L. T. Fawcett, Youngstown, Ohio, is consulting engineer.

Triangle Auto Parts, Inc., Toledo, Ohio, has been organized by Samuel Z. Kaplan and A. M. Steinberg, 623 Spitzer Building, and associates, to manufacture automobile parts and equipment.

Carthage Distilling Co., 7818 Anthony Wayne Avenue, Cincinnati, has begun construction of one-story addition, 40 x 108 ft., including improvements in present buildings. Cost over \$30,000 with equipment.

Victor R. Browning & Co., Inc., 1320 East 220th Street, Cleveland, manufacturer of electric traveling cranes, hoists, parts, etc., has acquired plant of W. A. Riddell Co., Willoughby, Ohio, from H. F. Holbrook, receiver. Plant will be remodeled and improved by new owner, which will remove Cleveland plant to that location at early date, increasing present capacity. Victor R. Browning is president of purchasing company.

Material Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Nov. 5 for 15 indicator assemblies (Circular 230); until Nov. 6, two 42-in. sheet dryers, and two vertical sheet dryers (Circular 234); until Nov. 9, 450 aircraft storage batteries (Circular 198); until Nov. 12, 20,000 metal sheets (Circular 225), vaporizer assemblies, liquid oxygen container assemblies, liquid oxygen containers, gage and valve assemblies (Circular 214), utility switch assemblies, ignition switch assemblies and connector panel assemblies (Circular 244); until Nov. 19, 10 cradle assemblies, V-engine transportation, 20 cradle assemblies, radial engine transportation with adapter ring (Circular 242).

Schwabe Pattern Co., Inc., Fort Wayne, Ind., has been organized by Richard J. Schwabe, Fort Wayne, and associates, to manufacture metal patterns and kindred products.



NOT only does a small addition of Molybdenum increase the strength and toughness of irons and steels, but it also builds up a stronger resistance to metal "diseases." . . . Corrosion, for instance:

For many years, a maker of large steam turbines had been using steel containing 12/15% Chromium for several of the turbine parts requiring superior corrosion-resistance. One difficulty encountered in this steel was its tendency at times to show a "wormy" finish on the forgings after pickling.

The addition of .50% Molybdenum has completely eliminated this trouble, saving the user far more than the additional cost of the "Moly" required. Furthermore, the Molybdenum serves to remove the tendency toward temper embrittlement that is occasionally encountered in this type of steel.

Molybdenum is a versatile alloy. It actually

intensifies the desirable characteristics of other alloys. It contributes greater tensile and creep strength, wear-resistance; makes machining and welding easier. In fact, new analyses — combinations of "Moly" and other alloys — are constantly leading to further developments . . . which is one of the reasons for our having begun the publication of a house-organ, "The Moly Matrix." It aims to help executives and engineers keep up to date with the progress of this extraordinary element. A request puts you on our mailing-list. An added request brings you either or both of these new books: "Molybdenum in 1934" and "Molybdenum in Cast Iron — 1934 Supplement"; while the Climax metallurgists and experimental laboratories in Detroit offer willing assistance toward the solution of your alloy problems. Climax Molybdenum Company, 295 Madison Ave., New York.

**CLIMAX Molybdenum**



# OVERHEAD CONVEYING

## by LINK-BELT

**M**AKING ceilings pay dividends by providing an overhead conveying system, saving floor space, and avoiding congestion—these things the overhead trolley conveyor readily accomplishes.

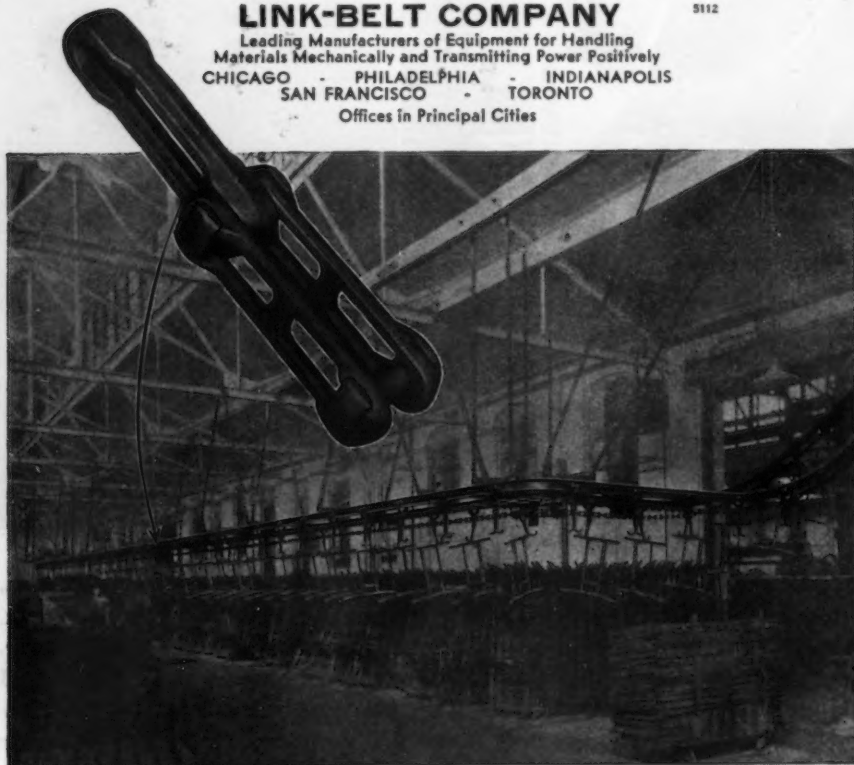
The Link-Belt Conveyor illustrated, handles glider parts from paint drying oven to packing room at Bunting Glider Company, Philadelphia. In addition to saving them a substantial sum in handling costs, they advise that this conveyor has saved about 3,000 sq. ft. of floor space, which was required when this work was done by their old method.

Link-Belt designs and builds elevators and conveyors of all types to meet any handling problem. Send for catalog.

### LINK-BELT COMPANY

Leading Manufacturers of Equipment for Handling  
Materials Mechanically and Transmitting Power Positively  
CHICAGO - PHILADELPHIA - INDIANAPOLIS  
SAN FRANCISCO - TORONTO  
Offices in Principal Cities

5112



**Durham Mfg. Co.,** Muncie, Ind., manufacturer of metal novelties, has acquired local factory of Acme Machine Products Co., and will remodel for production of chromium-plated tubular furniture.

**Quartermaster Depot,** Jeffersonville, Ind., asks bids until Nov. 14 for twist drills, bars, files, hammers, tool handles and other tools (Circular 33).

### ◀ MIDDLE WEST ▶

**Chromium Corp. of America, Inc.,** 4645 West Chicago Avenue, Chicago, will proceed with superstructure early in November for one-story addition to electro-plating plant. New unit will be equipped to handle products 40 to 50 tons in weight for chromium plating, up to 14 ft. in diameter and 22 ft. long. Cost about \$100,000 with equipment.

**Universal Nut-Cracking Machine Corp.,** 417 Missouri Avenue, East St. Louis, Ill., has been organized by Jerome F. Kidd and William F.

Rothe, East St. Louis, to manufacture special machine appliances and equipment.

**City Council,** North Mankato, Minn., plans call for bids early in November for new municipal electric light and power plant. Cost over \$85,000 with equipment. G. M. Orr & Co., Baker Building, Minneapolis, Minn., are consulting engineers.

**Dearborn Paper Co.,** 860 Rees Street, Chicago, has let general contract to Charles A. Erlandson, 7717 South Ada Street, for new one-story paper converting, storage and distributing plant, 130 x 460 ft. Cost about \$80,000 with equipment. J. M. LaPointe is company architect.

**Northern Natural Gas Co.,** Ogden, Iowa, has plans for a power house and a compressor station for natural gas distribution. Cost over \$45,000 with machinery.

**John Deere Tractor Co.,** Waterloo, Iowa, has plans for one-story addition, 181 x 360 ft., part of unit to be used for general production

and remainder for storage and distribution. Cost about \$65,000 with equipment.

**Fort Howard Paper Co.,** Green Bay, Wis., has placed general contract with Selmer & Co., 305 East Walnut Street, for two additions, 60 x 120 and 55 x 75 ft., costing about \$65,000 with equipment.

**Badger Paper Mills,** Peshtigo, Wis., has broken ground for extension, 60 x 160 ft., two stories and basement, to printing and waxing department. Cost about \$50,000 with equipment.

### ◀ SOUTHWEST ▶

**Johnston Tin Foil & Metal Co.,** 6108 South Broadway, St. Louis, manufacturer of metal specialties, tin foil, etc., has let general contract to Joseph E. Stauder, 5405 South Broadway, for one-story addition. Cost about \$25,000 with equipment. O'Meara & Hills, 5709 Waterman Street, are architects.

**Chevrolet Motor Co.,** Leeds, Mo., main plant at Detroit, plans one-story addition to branch assembling plant at Leeds. Cost over \$50,000 with equipment.

**City Council,** Burlington, Kan., has plans for new municipal electric light and power plant and distribution system. Fund of \$145,000 has been arranged. E. T. Archer & Co., New England Building, Kansas City, Mo., are consulting engineers.

**Hughes Tool Co.,** Sixteenth and Mississippi Streets, Ada, Okla., manufacturer of oil well tools and equipment, has plans for one-story addition, 30 x 45 ft., for storage and distribution.

**Common Council,** Bentonville, Ark., plans installation of pumping machinery and accessory equipment, pipe lines, etc., for extensions and improvements in municipal waterworks. Fund of \$60,000 has been secured through Federal aid. Black & Veatch, Mutual Building, Kansas City, Mo., are consulting engineers.

**Board of Education,** Library Building, Kansas City, Mo., has secured fund of \$120,000 through Federal aid for new three-story and basement mechanical shop and equipment building. Charles A. Smith, Finance Building, is architect.

**Martin Iron Works, Inc.,** Houston, Tex., has been organized by J. R. Martin, 5020 Walker Street, and associates, to operate a general iron works and metal-working plant.

**City Council,** Three Rivers, Tex., asks bids until Nov. 12 for waterworks equipment, pipe lines, etc. Fund of \$62,000 has been secured through Federal aid for this and sewage system, for which bids will be received at same time. A. A. Ririe, 622 East Woodlawn Avenue, San Antonio, Tex., is consulting engineer.

**George W. Owens Lumber Co.,** 3310 Commerce Street, Dallas, Tex., plans steam power house and machine shop in connection with rebuilding part of mill recently destroyed by fire.

**St. Louis Oxygen Co.,** G. W. Pennewill, manager, formerly of 2500 Montgomery Street, has purchased plant at 1530 South Vandeventer Avenue, St. Louis, for manufacture of commercial oxygen, hydrogen and acetylene, and will spend \$50,000 to \$60,000 for equipment. Company is a subsidiary of National Oxygen Co., Chicago.

### ◀ SOUTH CENTRAL ▶

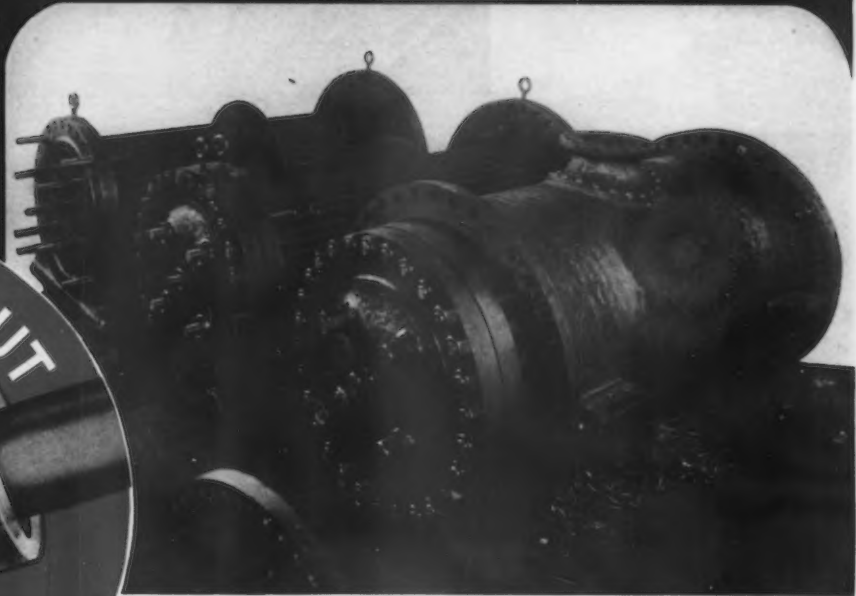
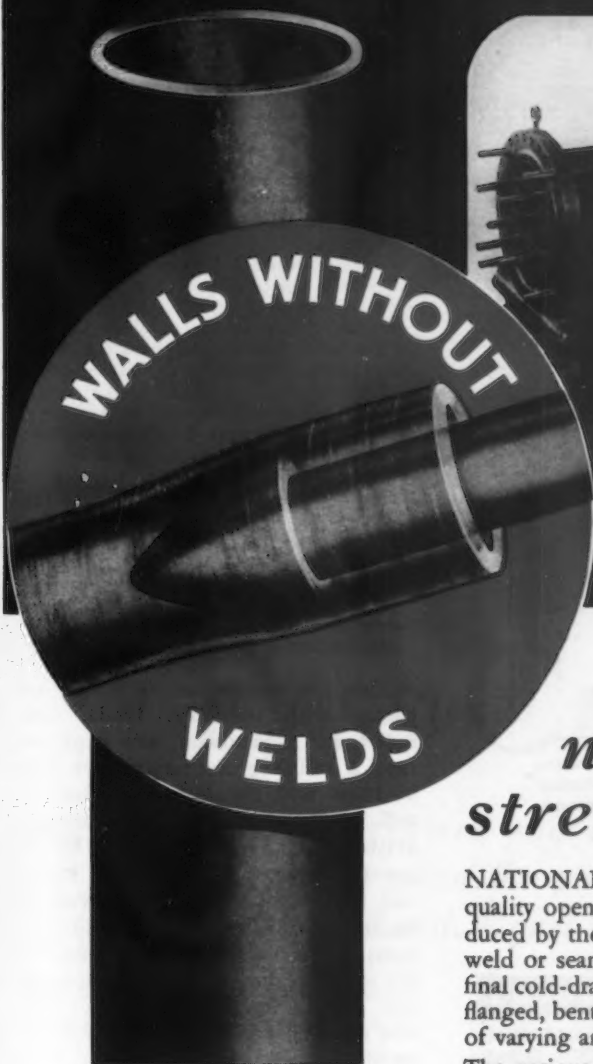
**City Council,** Troy, Ala., asks bids until Nov. 15 for new butane gas mixing and storage plant and distribution system, including butane-air gas mixing unit, gas storage tank, liquid storage tank, gas meters, regulators and auxiliary equipment; cast iron and galvanized steel pipe lines. Charles H. McKeand & Associates, Troy, are consulting engineers.

**Procurement Division,** Treasury Department, Public Works Branch, Washington, asks bids until Nov. 13 for engine-generator set for power house at National Home for Lepers, Carville, La.

**City Council,** Alexandria, La., plans extensions and improvements in municipal electric light and power plant, including equipment. Fund of \$250,000 has been arranged. I. W. Sylvester is city engineer.

**Kraftliner Gumming Corp.,** Mobile, Ala., recently formed, Arnold Jacoby, 1514 Fifty-sixth Street, Brooklyn, N. Y., general manager, will expend over \$100,000 for new paper converting mill, for which property has been acquired. Plant will specialize in production of gummed stickers, tape and kindred products. Proposed to have plant ready for service in 30 to 60 days. Company is associated with Southern Kraft Corp., Mobile.

# Be sure reliable tubes are used!



**•• seamless tubes mean no welds—uniform wall strength, no uncertainty**

NATIONAL Condenser and Heat Exchanger Tubes are made from the highest quality open-hearth or electric-furnace steel and are cold drawn from tubing produced by the piercing of solid billets. The walls, therefore, are entirely without weld or seam and structurally uniform and sound from end to end. After the final cold-drawing, tubes are heat-treated so they can be readily rolled into headers, flanged, bent, coiled or otherwise manipulated. For different requirements, steels of varying analyses are available.

The various products handled by modern heat transfer devices, from delicate food materials to the crudest vapors and liquids of large refineries, necessitate careful consideration in the choice of the tubes. Each different service may have a certain bearing on the physical and chemical property of the tube to be selected. NATIONAL engineers will gladly give advice in the choice of the best tubular material for the purpose intended. Correspondence is invited.

**NATIONAL TUBE COMPANY • Pittsburgh, Pa.**

Subsidiary of United States Steel Corporation

Pacific Coast Distributors • COLUMBIA STEEL CO. • San Francisco, Calif.

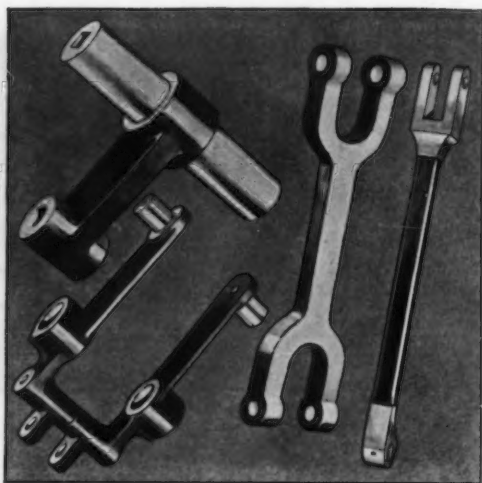
NATIONAL Condenser and Heat Exchanger Tubes are available in the following analyses of steel:

1. Low Carbon Steel (Boiler Tube Grade).
2. Low Carbon Copper-Steel (0.20 to 0.35% Copper).
3. 4-6% Chromium, 4-6% Chromium with Molybdenum, and Low Carbon Molybdenum Steels.
4. USS 18-8 (18% Chromium-8% Nickel) Stainless and Heat Resisting Steel

## NATIONAL CONDENSER and HEAT EXCHANGER TUBES



**Good Forgings**  
*never "just happen!"*



## FORGING BILLETS

All the skill, equipment and ingenuity of the forge shop cannot produce the best forging unless the forging billet itself possesses those rugged qualities of toughness, inherent strength, and ability to stand up under extraordinary demands and abuse.

And such forging billets don't "just happen" either. They are the result of the most careful manufacturing control through every step in production, zealously guarded and checked by an exacting laboratory practice that permits no hair line deviation from established, inviolate standards.

ASCO Special High Grade Forging Billets and Slabs impart to your forgings that *extra* quality, *extra* value, that result in outstanding performance.



*Our Metallurgical Laboratories are at your service in developing special steels for special purposes.*

**THE ANDREWS STEEL CO., NEWPORT, KENTUCKY**

**CARBON, CHROME, CHROME MOLYBDENUM, CHROME NICKEL, CHROME VANADIUM, MOLYBDENUM, NICKEL, NICKEL MOLYBDENUM, VANADIUM BILLETS AND SLABS**

## Economic Dictatorship At Its Worst

*(Continued from Page 15)*

graph from Prof. Rostovtzeff is peculiarly apropos:

It became a real plague which undermined and destroyed both the prosperity of the empire and the spirit of its inhabitants. It no longer amounted to a series of emergency measures carried out in difficult times and dropped as soon as normal conditions were re-established. When abnormal conditions ceased to be the exception and

became the rule, measures which had been regarded as temporary emergency measures became the regular system for administration, the foundation of the whole fabric of government.

In our own time, Italy and Russia have already progressed to this stage; the state controls everything. In Rome, following this state socialization, the next step was militarization.

The state had been so weakened by government encroachments upon activities that ought to have been left to individual enterprise and initiative; and the spirit of the people had been so broken that only a military autocracy could hold things together. The Emperor Gallienus seems to have recognized first the inevitability of a complete regimentation of the community under military control. The army had long been making the emperors; now the army, through the emperors, assumed domination of everything. Following Gallienus, Prof. Rostovtzeff tells us:

It is generally assumed that Aurelian took the last and decisive step in transforming the imperial power into a pure military autocracy. (One of his measures) affected the associations which were in the service of the state. We have followed the consecutive stages of the evolution of these associations. The government steadily assumed increased control of the most important of them, especially those formed by the ship owners and by the wholesale merchants dealing in foodstuffs. Side by side with this went the nationalization of the associations of workmen engaged in special work connected with trade and transport in the large cities, and of corporations connected with the security of life in the cities, especially the local fire-brigades. In each case there was involved not only strict control of the corporations by agents of the state, but also the attachment of the individuals both to their profession and to their place of residence, and the tendency to transform the individual's obligations into a hereditary status.

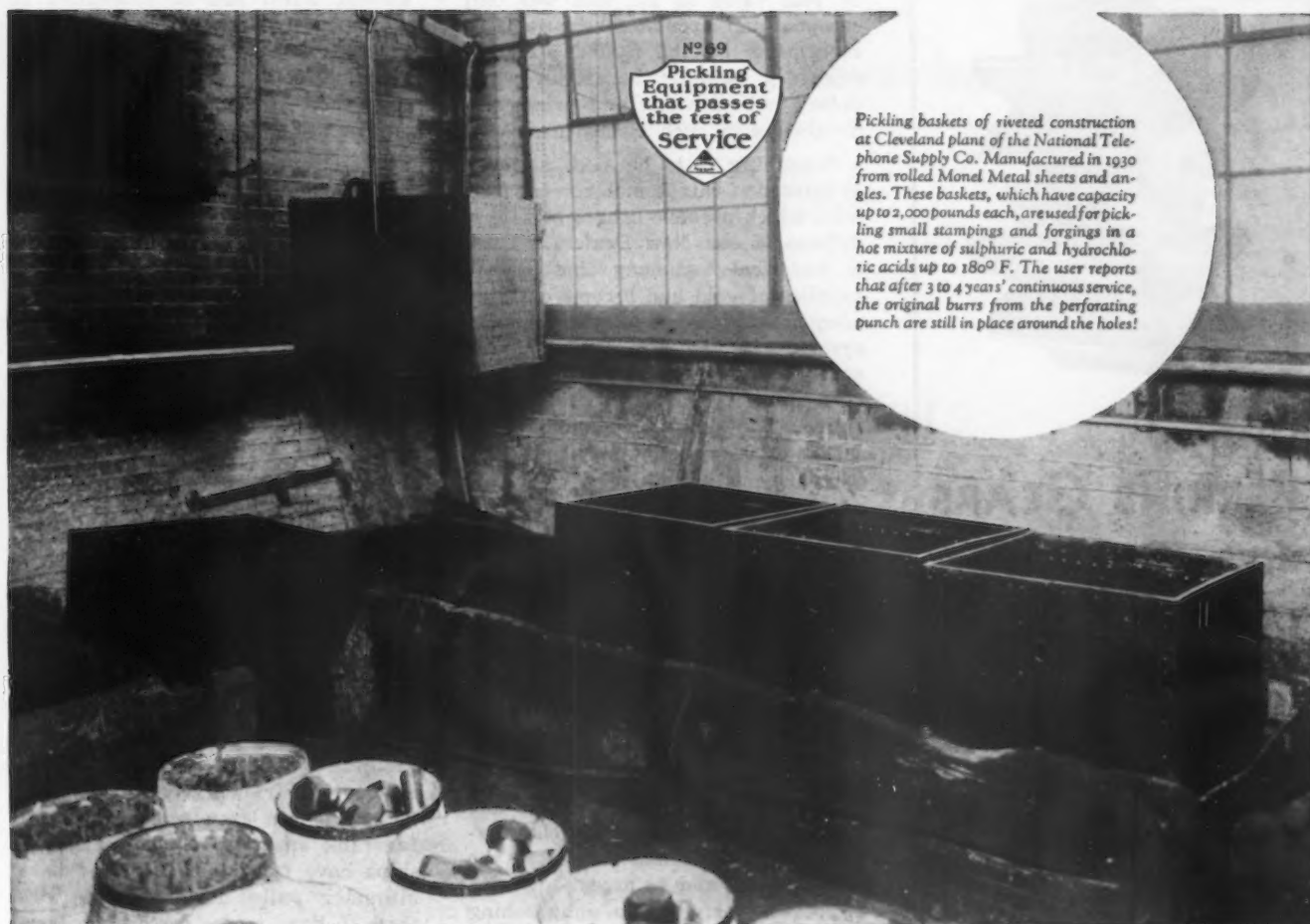
Thus the regimentation which had begun with industry, trade, commerce and agriculture, now expanded into a military authority over both business and people. Prof. Rostovtzeff comments that "the municipal aristocracy was still employed by the government and kept some of its social privileges, but was enslaved: it no longer enjoyed initiative and freedom; its members acted on behalf of the state in the capacity of servants, who closely resembled slaves. The new system of government was based on the emperor and on a new militarized bureaucracy supported by the army."

Thus through the various stages of state socialization the state entered its last phase of militarized bureaucracy; and "proceeded on the path which led to the destruction of the ancient foundations of the Roman Empire".

### Currency Depreciation

In this third century period when the Empire was plainly in decay, there was a rapid depreciation of the currency and increase in prices. In

*(Continued on Page 90)*



Pickling baskets of riveted construction at Cleveland plant of the National Telephone Supply Co. Manufactured in 1930 from rolled Monel Metal sheets and angles. These baskets, which have capacity up to 2,000 pounds each, are used for pickling small stampings and forgings in a hot mixture of sulphuric and hydrochloric acids up to 180° F. The user reports that after 3 to 4 years' continuous service, the original burrs from the perforating punch are still in place around the holes!

# Less Cussing...

*Machinists, Heat Treaters and Enamellers turn out better work when the pickling room is equipped with Monel Metal*

TAKE a forging that's all covered with gritty scale; or a casting with silica sand embedded in its surface from the mold. You know what that does to a machine tool. And what it does to the disposition of the machine operator. Also, how it affects your toolroom boss. And, incidentally, the manager who's watching costs!

Or take a part that balks every attempt of a heat treater to get even penetration...no matter how carefully he regulates his fuel or what strange mixtures he stirs into his quenching

**MONEL METAL TIE RODS**  
make good wooden tanks  
**LAST LONGER**

bath. Maybe forging scale or foreign deposits can't play hob with that situation.

And as for enamelling a surface which isn't cleaned right down to the quick...well, you know that simply can't be done.

Clean pickling is the answer in all these shops. And calls (particularly where gritty, silica scale is to be cleaned) for pickling equipment that isn't quickly eaten away—even in a bath of hydrofluoric acid.

Monel Metal pickling equipment saves a heap of grief, a heap of "cussing". It cuts costs because it is strong enough and resistant enough to stand up well under highly corrosive condi-



tions. Which simply means that the Monel Metal itself isn't being eaten away and isn't weakening the bath unduly. Hence, repairs are a rarity and replacements few and far between.

Why not get detailed facts on Monel Metal performance in the particular pickling job that you have in mind? We have the dope waiting for you. Write.

THE INTERNATIONAL NICKEL  
COMPANY, INC.  
67 WALL STREET NEW YORK, N. Y.

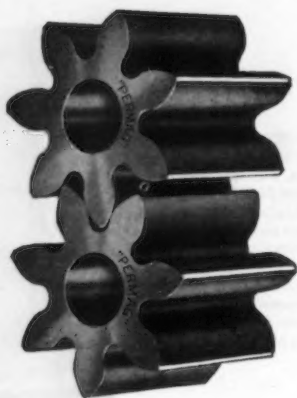
## Monel Metal



Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.







## Users of PERKINS GEARS Know Gear Values

**PERKINS** Gears give users the accuracy, quality, and dependability so necessary in successful gear performance.

Perkins Gears are produced by gear specialists . . . on specially designed equipment. They are "mirror finished" by a special polishing operation. Each gear is made to conform to Perkins Super Standards of Quality.

Order Perkins Gears . . . you will find it pays.

Write for our 102 page gear catalog.

**Perkins Machine & Gear Co.**  
147 Circuit Ave.  
SPRINGFIELD, MASS.

(Continued from Page 88)

the reign of Caracalla the silver money depreciated and gold coins disappeared; the purchasing power of money grew continually less. Under Claudius II and Aurelian the issuance of money of intrinsic value was discontinued. Just as our New Deal has taken gold out of circulation and even made it a crime to possess gold; and just as the economic dictators of Italy, Germany and Russia have substituted paper for metal money in the hands of the people; so the Roman reformers issued "a new system of

fiduciary money, which had almost no real value at all, and was only accepted and circulated because of its recognition by the State." Thus a monetary inflation began, in which money lost its value and prices rose as always in such conditions.

Something is to be said, however, in defense of this Roman retreat from gold, which perhaps cannot be said in defense of our New Dealers. There is historical testimony that Rome's supplies of gold had become quite inadequate to sustain a sound money system. In the period of conquest vast treasures of gold and silver had been brought in from Africa and the East. The mines of Spain, chief source of new gold, were worked out to the point where they could not nearly meet the needs. So the rulers were compelled to substitute something else for gold. That necessity entitles them to an alibi which cannot be set up by their American copyists.

### They Devalued the Money, Too!

About the middle of the third century the depreciation of money became so ruinous that the managers of the bank of exchange went on a strike, closed their institutions and refused to deal in the imperial currency. The government ordered the bank to open and to accept all coins except counterfeit. An enlightening proof that there is nothing new under the sun is that in this period contracts were made requiring payment, not in the depreciated currency of the time, but in the old Egyptian denominations of metallic money, of which it was believed a good deal had been driven into hiding because of the inflation. Gresham's law worked 2000 years ago just as well as it does now, although it had not been written down in the terms of economic philosophy. Just as we have noted that the ancient economic dictators had no understanding of the law of supply and demand and the function of price, so now we find them similarly innocent of the rule that the bad money will always drive out the good. But such ignorance can hardly be pleaded by our modern inflationists, who certainly must have heard of the law of supply and demand, the function of price, and Gresham's law of competing currencies.

We have now sketched the economic program that was contemporaneous with and in a large part responsible for the decay of the Roman state. Substantially the same course seems to have been run by all the ancient civilizations. The basic blunder seems to have been that the political rulers also set themselves up as economic

rulers. The peoples and rulers of the ancient world had no conception of political democracy. The masses of people assumed that it was their inevitable destiny to be ruled, and to obey their rulers. No such idea as participating in their government, ever gained a lodgement in their minds. This submissiveness ought to have made dictatorship easier than under a democracy, where parties, divisions and factions are bound to develop. Something like unanimity is possible where dissenters may reasonably expect to have their heads cut off. If in 1896 our country had been organized as was Rome of the Empire, William Jennings Bryan would have been dealt with as Catiline was. If in 1912 our ways had been the ways of Roman imperialism, the Bull Moose campaign would have been a civil war. Finally, if our world war had been fought under the rules of the second century B. C., Berlin would have been as thoroughly wiped out during the winter of 1918-1919 as was Carthage at the end of the third Punic war.

Under that sort of rule the little group in control of a state had things decidedly their own way. And yet all history shows even under the most favorable auspices, economic dictatorships have failed pitifully, and have ultimately pulled down the state with them. Far more certainly, then, would economic dictatorship fail under democracy, where every interest and opinion insists upon a hearing, where the press is free, debate is perpetual, and laws and policies are bound to be the result of compromise.

(To be continued)

## Steel Wages Raised Sharply Under Code

**T**HE total wage bill of the steel industry was increased by approximately \$95,000,000 during the first full year's operation of the steel code, according to figures compiled by the American Iron and Steel Institute. Over this period, from August, 1933, to September of this year, \$470,000,000 went into pay envelopes of the industry's employees.

Three wage advances have taken place in the industry since the code was inaugurated. The first, averaging 16½ per cent, was in August, 1933. The second came in November through adjustment of hours of work, and the third was in April of this year when a 10 per cent addition was put into effect.

Hourly wage rates for steel workers now average 63.5c. against 47.3c. in June, 1933, an increase of 34 per cent.